9215

SUPREME COURT OF THE UNITED STATES.

No. 93.

JOSEPH BATTIN, PATENTEE, AND SAMUEL BATTIN, ASSIGNEE, PLAINTIFFS IN ERROR,

vs.

JAMES TAGGERT, DEFENDANT IN ERROR.

IN ERROR TO THE CIRCUIT COURT, U. S., FOR THE EASTERN DISTRICT OF PENNSYLVANIA.

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In the circuit court of the United States, for the eastern district of Pennsylvania, in the third circuit, of April session, 1850, No. 11.

JOSEPH BATTIN, patentee, and SAMUEL BATTIN, assignee, vs. JAMES TAGGERT. } W. A. Porter. 11. F. W. Hughes.

Summons case. Infringement of patent right.

1850, March 30. Precipe filed, and summons exit. Returnable on the 11th of April next.
" April 11. Summons returned. "Served."
" July 30. Narr. filed, rule to plead in 4 weeks, or judgment.
" August 20. Defendants plead "not guilty."
" November 4. And now a jury being called, come, to wit: Alexander Harper, Jacob F. Markley, Edward Davies, Adam Mintzer, John Neville, Samuel H. Fisher, Ernest C. Smith, Stevenson Smith, Hiram Evans, Daniel Saeger, Jesse J. Knight, and Ralph H. Knowles, who are respectively sworn or affirmed.
" November 12. Amended narr., filed.
" November 15. And now the jurors aforesaid, upon their oaths and affirmations aforesaid, respectively do say, that they find in favor of the plaintiffs, and assess the damages at eight hundred dollars, (800.)
Judgment nisi.
" November 15. Plaintiffs' counsel, by leave of the court, enters motion to treble the damages as found by the jury.
" November 15. On motion of G. Mallery, esquire, for defendant, rule to show cause why a new trial should not be granted.
" November 18. Reasons for a new trial filed.
1851, June 25. Plaintiffs' bill of costs filed.
" September 10. Opinion of the court filed. New trial granted.
1852, October 28. And now a jury being called, come, to wit: Robert Parke, William R. Gorgas, Abraham Kauffman, Samuel H. Rothermel, Hugh Catherwood, Frederick Fairlamb, James McCaa, Lewis R. Hammersly, William S. Hallowell, Patrick McBride, Thomas S. Woods, and Benjamin Henderson, who are respectively sworn or affirmed.
October 28. And now the jurors aforesaid upon their oaths and affirmations aforesaid respectively do say, that they find in favor of the defendants.

Judgment nisi.
1852, November 2. Charge of Judge Kane, to the jury, filed.
" December 1. Writ of error to Supreme Court allowed.
1853, May 28. Bond of Samuel Battin and George K. Smith, filed.

UNITED STATES OF AMERICA,
Eastern district of Pennsylvania, sct.

I, George Plitt, clerk of the circuit court of the United States, for the eastern district of Pennsylvania, in the third circuit, do hereby certify, that the foregoing is a true and faithful copy of the docket entries in the above entitled cause, now remaining of record in my office.

In testimony whereof I have hereunto subscribed my name and affixed the seal of the said circuit court, at Philadelphia, this [SEAL.] eighteenth day of June, A. D. 1853, and in the seventy-seventh year of the independence of the said United States.

GEORGE PLITT, *Clerk circuit court.*

UNITED STATES OF AMERICA, *ss.*

The President of the United States, to the honorable the judges of the [SEAL.] circuit court of the United States, for the eastern district of Pennsylvania, greeting:

Because in the record and proceedings, as also in the rendition of the judgment of a plea which is in the said circuit court, before you, or some of you, between Joseph Battin, patentee, and Samuel Battin, assignee, plaintiffs, and James Taggert, defendant, a manifest error hath happened, to the great damage of the said plaintiffs, as by their complaint appears.

We being willing that error, if any hath been, should be duly corrected, and full and speedy justice done to the parties aforesaid in this behalf, do command you, if judgment be therein given, that then under your seal, distinctly and openly, you send the record and proceedings aforesaid, with all things concerning the same, to the Supreme Court of the United States, together with this writ, so that you have the same at Washington, on the first Monday of December next, in the said Supreme Court to be then and there held; that the record and proceedings aforesaid being inspected, the said Supreme Court may cause further to be done therein, to correct that error, what of right and according to the laws and custom of the United States should be done.

Witness the honorable Roger B. Taney, chief justice of the said Supreme Court, the first Monday of December, in the year of our Lord one thousand eight hundred and fifty-two.

(Signed) WM. THOS. CARROLL,
Clerk of the Supreme Court of the United States.

Allowed by J. K. KANE,
District judge United States.

UNITED STATES OF AMERICA,
Eastern district of Pennsylvania, ss.

In obedience to the foregoing writ, I herewith transmit to the Supreme Court of the United States a full and complete transcript of the record and proceedings of the circuit court of the United States, for the eastern district of Pennsylvania, in the third circuit, in a certain suit therein determined in favor of James Taggert, a citizen of the State of Pennsylvania, defendant, against Joseph and Samuel Battin, citizens of the State of Pennsylvania, plaintiffs.

Witness my hand, and the seal of the said court, at Philadelphia, this eighteenth day of June, A. D. 1853, and in the seventy-seventh year of the independence of the said United States.

[L. S.]

GEORGE PLITT, *Clerk circuit court.*

Citation.

The United States of America, to James Taggert, greeting:

You are hereby cited and admonished to be and appear at a Supreme Court of the United States, to be holden at Washington on the first Monday of December next, pursuant to a writ of error, filed in the clerk's office of the circuit court of the United States, for the eastern district of Pennsylvania, wherein Joseph Battin, patentee, and Samuel Battin, assignee, are plaintiffs in error, and you are defendant in error, to show cause, if any there be, why judgment rendered against the said plaintiffs in error, as in the said writ of error mentioned, should not be corrected, and why speedy justice should not be done to the parties in that behalf.

Witness the honorable John K. Kane, one of the judges of the circuit court of the United States, for the eastern district of Pennsylvania, in the third circuit, this twenty-fifth day of February, in the year of our Lord one thousand eight hundred and fifty-three.

J. K. KANE.

SCHUYLKILL COUNTY, *ss.*

On this fourteenth day of March, in the year of our Lord one thousand eight hundred and fifty-three, personally appeared John T. Shoener before me, the subscriber, president judge of the court of common pleas, of Schuylkill county, in the State of Pennsylvania, and makes oath that he delivered a true copy of the within citation to James Taggert on the twelfth day of March, 1853.

C. W. HEGINS, *Prest. Judge.*

JOSEPH BATTIN and Samuel Battin, pl'ffs in error,
vs.
JAMES TAGGERT, deft. in error.

Pleas before the honorable the judges of the circuit court of the United States, for the eastern district of Pennsylvania, in the third circuit, of April session, 1850, No. 11.

It is thus contained:

Declaration.

In the circuit court of the United States, for the eastern district of Pennsylvania, April sessions, 1850.

EASTERN DISTRICT OF PENNSYLVANIA, *ss.*

James Taggert, late of the said district, was attached to answer Joseph Battin, patentee, and Samuel Battin, assignee, of a plea of trespass on the case. And thereupon the said plaintiffs, by John Cadwalader and William A. Porter, their attorneys, complain, for that whereas the said Joseph was the original and first inventor of a certain new and useful improvement in the machine for breaking and screening coal, in the letters patent next hereinafter mentioned and described; the same being a new and useful improvement in the machine for breaking and screening coal, which was not known or used before his said invention, and which was not, at the time of his first application for a patent, as hereinafter mentioned, in public use, or on sale, with his consent or allowance; and the said Joseph being so as aforesaid the inventor thereof, and being also a citizen of the United States, on the sixth day of October, one thousand eight hundred and forty-three, upon due application therefor, did obtain certain letters patent therefor in due form of law, under the seal of the Patent office of the United States, signed by the Secretary of State, and countersigned by the Commissioner of Patents of the United States, bearing date the day and year aforesaid, whereby there was secured to him, his heirs, administrators, or assigns, for the term of fourteen years from and after the date of the patent, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement.

And afterwards, to wit, on the twentieth day of January, in the year one thousand eight hundred and forty-four, a certain schedule, in the words of the said Joseph, containing a description of an additional improvement in the said machine, was, in conformity to the statutes of the United States, annexed and added to the aforesaid letters patent, under the seal of the Patent office of the United States, signed by the Commissioner of Patents, bearing date the said twentieth day of January, one thousand eight hundred and forty-four, and duly recorded in the Patent office, according to the statute in such case made and provided.

And the plaintiffs further say, that the said letters patent and addition having been duly surrendered, the same were cancelled in due form of law, and new letters patent were ordered to issue on an amended specification.

And thereupon, afterwards, to wit, on the fourth day of September, in the year of our Lord one thousand eight hundred and forty-nine, the said last mentioned letters patent, in due form of law, sealed, signed, and countersigned, in the manner herein first above mentioned, bearing date the day and year aforesaid, were issued, securing, for the term

of fourteen years, from the sixth day of October, one thousand eight hundred and forty-three, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said machine; a description whereof was given in the schedule thereunto annexed, and made a part thereof, as by the said last mentioned letters patent in court to be produced, reference being thereunto had, will fully appear.

And the said plaintiffs further say, that before the committing of the grievances hereinafter mentioned; to wit, on the fourteenth day of February, in the year eighteen hundred and forty-four, the said Joseph did, by an instrument of writing, under his hand and seal duly executed, and bearing date the day and year last aforesaid, assign unto the said Samuel one equal undivided half of all his right, title, and interest in the said invention; which said assignment was afterwards, to wit, on the thirteenth day of March, eighteen hundred and forty-four, and within three months from the execution thereof, duly recorded in the Patent office, according to the statute in such case made and provided; yet the said defendant, well knowing the premises, but contriving to injure the plaintiffs, to wit, on the first day of January, eighteen hundred and fifty, and at divers times before and afterwards, during the said term of fourteen years mentioned in said letters patent, did, after the issuing of the said last mentioned letters patent, and before the commencement of this suit, to wit, at the district aforesaid, unlawfully and wrongfully, and without the consent or allowance, and against the will of the plaintiffs, and contrary to the form and effect of the statute in such case made and provided, make, construct, use, and vend to others to be used, the said machine, in violation and infringement of the exclusive right so secured to the said Joseph by the said letters patent as aforesaid, and to the said Samuel by the said assignment; whereby the plaintiffs have been and are greatly injured, and deprived of great profits and advantages which they might, and otherwise would, have derived from the said new and useful machine. And by reason thereof the said plaintiffs have sustained actual damage to the amount of twenty thousand dollars; and, by force of the statutes aforesaid, an action has accrued to them to recover the said actual damage, and such additional amount, not exceeding in the whole three times the amount of such actual damage, as the court may see fit to order and adjudge.

And also for that the said Joseph was the original and first inventor of a certain new and useful improvement in the machine for breaking and screening coal in the letters patent next hereinafter mentioned and described, the same being a new and useful improvement in the machine for breaking and screening coal which was not known or used before his said invention, and which was not, at the time of his first application for a patent, as hereinafter mentioned, in public use or on sale with his consent or allowance. And the said Joseph being so as aforesaid the inventor thereof, and being also a citizen of the United States, on the sixth day of October, one thousand eight hundred and

forty-three, upon due application therefor, did obtain certain letters patent therefor, in due form of law, under the seal of the Patent office of the United States, signed by the Secretary of State, and countersigned by the Commissioner of Patents of the United States, bearing date the day and year aforesaid, whereby there was secured to him, his heirs, administrators, or assigns, for the term of fourteen years from and after the date of the patent, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement. And afterwards, to wit, on the twentieth day of January, in the year one thousand eight hundred and forty-four, a certain schedule, in the words of the said Joseph, containing a description of an additional improvement in the said machine, was, in conformity to the statutes of the United States, annexed and added to the aforesaid letters patent, under the seal of the Patent office of the United States, signed by the Commissioner of Patents, bearing date the said twentieth day of January, one thousand eight hundred and forty-four, and duly recorded in the Patent office, according to the statute in such case made and provided. And the plaintiffs further say, that the said letters patent and addition having been duly surrendered, the same were cancelled in due form of law, and new letters patent were ordered to issue on an amended specification. And thereupon, afterwards, to wit, on the fourth day of September, in the year of our Lord one thousand eight hundred and forty-nine, the said last mentioned letters patent, in due form of law sealed, signed, and countersigned in the manner herein first above mentioned, bearing date the day and year aforesaid, were issued, securing for the term of fourteen years, from the sixth day of October, one thousand eight hundred and forty-three, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said machine, a description whereof was given in the schedule thereunto annexed, and was made a part thereof; as by the said last mentioned letters patent in court to be produced, reference being thereunto had, will fully appear. And the said plaintiffs further say, that before the committing of the grievances hereinafter mentioned, to wit, on the fourteenth day of February, in the year eighteen hundred and forty-four, the said Joseph did, by an instrument of writing, under his hand and seal duly executed, and bearing date the day and year last aforesaid, assign unto the said Samuel one equal undivided half of all his right, title, and interest in the said invention; which said assignment was afterwards, to wit, on the thirteenth day of March, eighteen hundred and forty-four, and within three months from the execution thereof, duly recorded in the Patent office, according to the statute in such case made and provided. Yet the defendant, well knowing the premises, but contriving to injure the plaintiffs, to wit, on the first day of January, eighteen hundred and fifty, and at divers times before and afterwards, during the said term of fourteen years mentioned in said letters patent, did, after the issuing of the said last mentioned letters patent, and before the commencement of this suit, to wit, at the district aforesaid,

unlawfully and wrongfully, and without the consent or allowance, and against the will of the plaintiffs, and contrary to the form and effect of the statute in such case made and provided, make, construct, and use the said machine, in violation and infringement of the exclusive right so secured to the said Joseph by the said letters patent as aforesaid, and to the said Samuel by the said assignment; whereby the plaintiffs have been, and are, greatly injured, and deprived of great profits and advantages which they might, and otherwise would, have derived from the said new and useful machine. And by reason thereof the said plaintiffs have sustained actual damage to the amount of twenty thousand dollars; and by force of the statutes aforesaid an action has accrued to them to recover the said actual damage, and such additional amount, not exceeding in the whole three times the amount of such actual damage, as the court may see fit to order and adjudge.

And also for that the said Joseph was the original and first inventor of a certain new and useful improvement in the machine for breaking and screening coal in the letters patent next hereinafter mentioned and described; the same being a new and useful improvement in the machine for breaking and screening coal, which was not known or used before his said invention, and which was not, at the time of his first application for a patent, as hereinafter mentioned, in public use or on sale with his consent or allowance. And the said Joseph, being so as aforesaid the inventor thereof, and being also a citizen of the United States, on the sixth day of October, one thousand eight hundred and forty-three, upon due application therefor, did obtain certain letters patent therefor, in due form of law, under the seal of the Patent office of the United States, signed by the Secretary of State, and countersigned by the Commissioner of Patents of the United States, bearing date the day and year aforesaid, whereby there was secured to him, his heirs, administrators, or assigns, for the term of fourteen years from and after the date of the patent, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement. And afterwards, to wit, on the twentieth day of January, in the year one thousand eight hundred and forty-four, a certain schedule in the words of the said Joseph, containing a description of an additional improvement in the said machine, was, in conformity to the statutes of the United States, annexed and added to the aforesaid letters patent, under the seal of the Patent office of the United States, signed by the Commissioner of Patents, bearing date the said twentieth day of January, one thousand eight hundred and forty-four, and duly recorded in the Patent office, according to the statute in such case made and provided. And the plaintiffs further say, that the said letters patent and addition having been duly surrendered, the same were cancelled in due form of law, and new letters patent were ordered to issue on an amended specification. And thereupon, afterwards, to wit, on the fourth day of September, in the year of our Lord one thousand eight hundred and forty-nine, the said last mentioned letters patent, in due form of law, sealed, signed, and countersigned, in the

manner herein first above mentioned, bearing date the day and year aforesaid, were issued, securing for the term of fourteen years from the sixth day of October, one thousand eight hundred and forty-three, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said machine, a description whereof was given in the schedule thereunto annexed, and was made a part thereof, as by the said last mentioned letters patent, in court to be produced, reference being thereunto had, will fully appear. And the said plaintiffs further say, that before the committing of the grievances hereinafter mentioned, to wit, on the fourteenth day of February, in the year eighteen hundred and forty-four, the said Joseph did, by an instrument of writing, under his hand and seal duly executed, and bearing date the day and year last aforesaid, assign unto the said Samuel one equal undivided half of all his right, title, and interest in the said invention, which said assignment was afterwards, to wit, on the thirteenth day of March, eighteen hundred and forty-four, and within three months from the execution thereof, duly recorded in the Patent office, according to the statute in such case made and provided. Yet the said defendant, well knowing the premises, but contriving to injure the plaintiffs, to wit, on the first day of January, eighteen hundred and fifty, and at divers times before and afterwards, during the said term of fourteen years mentioned in said letters patent, did, after the issuing of the said last mentioned letters patent, and before the commencement of this suit, to wit, at the district aforesaid, unlawfully and wrongfully, and without the consent or allowance, and against the will of the plaintiffs, and contrary to the form and effect of the statute in such case made and provided, use the said machine, in violation and infringement of the exclusive right so secured to the said Joseph by the said letters patent as aforesaid, and to the said Samuel by the said assignment, whereby the plaintiffs have been, and are, greatly injured, and deprived of great profits and advantages which they might, and otherwise would, have derived from the said new and useful machine, and by reason thereof the said plaintiffs have sustained actual damage to the amount of twenty thousand dollars; and by force of the statutes aforesaid, an action has accrued to them to recover the said actual damage, and such additional amount, not exceeding in the whole three times the amount of such actual damage, as the court may see fit to order and adjudge.

And also for that the said Joseph was the original and first inventor of a certain new and useful improvement in the machine for breaking and screening coal, in the letters patent next hereinafter mentioned and described, the same being a new and useful improvement in the machine for breaking and screening coal, which was not known or used before his said invention, and which was not, at the time of his application for a patent, as hereinafter mentioned, in public use or on sale with his consent or allowance. And the said Joseph being so as aforesaid the inventor thereof, and being also a citizen of the United States, on the sixth day of October, one thousand eight hundred and forty-

three, upon due application therefor, did obtain certain letters patent therefor in due form of law, under the seal of the Patent office of the United States, signed by the Secretary of State, and countersigned by the Commissioner of Patents of the United States, bearing date the day and year aforesaid, whereby there was secured to him, his heirs, administrators or assigns, for the term of fourteen years from and after the date of the patent, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement. And afterwards, to wit, on the twentieth day of January, in the year one thousand eight hundred and forty-four, a certain schedule in the words of the said Joseph, containing a description of an additional improvement in the said machine, was, in conformity to the statutes of the United States, annexed and added to the aforesaid letters patent, under the seal of the Patent office of the United States, signed by the Commissioner of Patents, bearing date the said twentieth day of January, one thousand eight hundred and forty-four, and duly recorded in the Patent office according to the statutes in such case made and provided, as by the said letters patent and the schedules thereto annexed, in court to be produced, will fully appear. And the said plaintiffs further say, that after the time of making and granting the said letters patent, and of annexing and adding the description of the said improvement as aforesaid, and before the committing of the grievances hereinafter mentioned, to wit, on the fourteenth day of February, eighteen hundred and forty-four, the said Joseph did, by an instrument of writing, under his hand and seal duly executed, and bearing date the day and year last aforesaid, assign unto the said Samuel one equal undivided half of all his right, title, and interest in the said invention, as secured to him by said letters patent; which said assignment was afterwards, to wit, on the thirteenth day of March, in the year last aforesaid, and within three months from the execution thereof, duly recorded in the Patent office according to the statute in such case made and provided. Yet the said defendant, well knowing the premises, but contriving to injure the plaintiffs, to wit, on the first day of January, eighteen hundred and fifty, and at divers times before and afterwards during the said term of fourteen years mentioned in said letters patent, and before the commencement of this suit, to wit, at the district aforesaid, did unlawfully and wrongfully, and without the consent or allowance, and against the will of the plaintiffs, make, construct, use, and vend to others to be used, the said new and useful improvement, in violation and infringement of the exclusive right so secured to the said Joseph by said letters patent as aforesaid, and to the said Samuel by the said assignment, and contrary to the form of the statutes of the United States in such case made and provided, whereby the plaintiffs have been greatly injured, and deprived of great profits and advantages which they might, and otherwise would, have derived from the said invention, and have sustained actual damage to the amount of twenty thousand dollars. And by force of the statutes aforesaid an action has accrued to them to recover the said actual damage, and such additional

amount, not exceeding in the whole three times the amount of such actual damages, as the court may see fit to order and adjudge.

Amendment of declaration.

Afterwards, to wit, on the twelfth day of November, A. D. 1850, plaintiffs' counsel moves to amend the declaration in all cases where the words "on the 4th day of September, in the year of our Lord 1849, the said last mentioned letters patent in due form of law, sealed, signed, and countersigned in the manner herein first above mentioned" occur, by striking out "in the manner first above mentioned," and substituting therefor the words "under the seal of the Patent office of the United States, signed by the Secretary of the Interior, and countersigned by the Commissioner of Patents of the United States."

And thereupon the amendment aforesaid is allowed by the court.

Plea of defendant.

And thereupon the said defendant, by his attorneys, F. W. Hughes and Garrick Mallery, esquires, comes and defends the force and injury, &c., and says, that he is in no wise guilty of the trespass aforesaid as the said plaintiffs have alleged against him. And of this he puts himself upon the country, and the said plaintiffs do the like.

Jury.

Therefore let a jury thereupon come before the judges aforesaid, at Philadelphia aforesaid, on the eleventh day of October, anno Domini one thousand eight hundred and fifty, by whom, &c., who neither, &c., to recognise, &c., because as well, &c.

On which said eleventh day of October, A. D. 1850, come the parties aforesaid, by their attorneys aforesaid, and the jurors of the jury aforesaid being called likewise come, to wit, Alexander Harper, Jacob F. Markley, Edward Davies, Adam Mintzer, John Neville, Samuel H. Fisher, Ernest C. Smith, Stevenson Smith, Hiram Evans, Daniel Saeger, Jesse J. Knight, and Ralph H. Knowles, who are duly empannelled, returned, chosen, tried, and sworn or affirmed to speak the truth of the matter within contained.

Verdict of the jury.

And now, to wit, the jurors aforesaid, upon their oaths and affirmations aforesaid, respectively do say, that they find in favor of the plaintiffs, and assess the damages at eight hundred dollars, ($800.)

Motion to treble the damages.

Whereupon the said plaintiffs, by their attorneys aforesaid, move the court here, that the damages as found by the jury be trebled, and that judgment be entered accordingly.

Motion for new trial.

And the said defendant, by his attorneys aforesaid, prays that the verdict aforesaid may be quashed, and that the issue aforesaid be tried anew by other jurors, to be afresh empannelled, because—

1. The court erred in deciding that the patent of September 4, 1849, was for the same invention as that claimed in the patent of October 6, 1843, and could be included in the reissued patent.

2. The court erred in deciding that the suits can be maintained in the name of Samuel Battin, as assigned under the assignment to him of February, 1844.

3. The copy of the assignment from the Patent office was illegally received in evidence for any purpose.

4. The court erred in permitting the plaintiff to amend his declaration in a material matter of substance without any condition, and without granting a continuance to the defendant as requested.

5. Material evidence on the part of the defendant was excluded by the construction given to the defendant's notice of special matter, which, if received, would have produced a different result.

6. Important evidence was discovered when it was too late to give notice, and during the trial, which is set forth in the affidavit of John L. L. Morris, which was presented to the court.

7. The court erred in the instruction given to the jury as to the grounds upon which they should ascertain the actual damages.

8. The damages are excessive.

New trial granted.

Therefore, afterwards, to wit, on the 10th day of September, 1851, it is considered by the court here that the said verdict be quashed, and that a new trial be granted accordingly.

Jury.

Whereupon, afterwards, to wit, at the October session, anno Domini one thousand eight hundred and fifty-two, of the said court, come the parties aforesaid, by their attorneys aforesaid, and the jurors of the jury aforesaid being called likewise come, to wit, Robert Parke, William R. Gorgas, Abraham Kauffman, Samuel H. Rothermel. Hugh Catherwood, Frederick Fairlamb, James McCaa, Lewis R. Hammersly, William S. Hallowell, Patrick McBride, Thomas S. Woods, and Benjamin Henderson, who are duly empannelled, returned, chosen, tried, and sworn or affirmed to speak the truth of the matter within contained.

Bill of exceptions.

Be it remembered, that in the sessions of April, 1850, No. 11, came Joseph Battin, patentee, and Samuel Battin, assignee, into the circuit court of the United States, for the eastern district of Pennsylvania, and impleaded James Taggert in a certain plea of trespass on the case,

for an infringement of patent right, &c.; wherein the plaintiffs' declaration and the defendant's plea were duly filed, as set forth on the record.

And thereupon issue was joined between them.

And afterwards, to wit, at a session of said court held at the city of Philadelphia, before the honorable R. C. Grier and the honorable J. K. Kane, judges of the said court, on the 28th day of October, A. D. 1852, the aforesaid issue between the said parties came to be tried by a jury of the said district for that purpose duly empannelled; at which day came as well the said plaintiff as the said defendant, by their respective attorneys; and the jurors of the jury aforesaid, empannelled to try the said issues, being also called came, and were then and there in due manner chosen, and sworn or affirmed to try the said issue.

And upon the trial the counsel of the said plaintiffs, to maintain the issue on their part, offered the following evidence, and read and gave the same to the jury.

Letters patent and specification, dated 6th October, 1843, and an addition thereto, dated 20th January, 1844, of which copies are hereto annexed, marked A.

Also letters patent and specification, dated 12th February, 1844, of which a copy is hereto annexed, marked B.

Also reissued letters patent and specification, dated 4th September, 1849, of which a copy is hereto annexed, marked C.

The plaintiffs then offered to prove the assignment by Joseph Battin to Samuel Battin of a portion of the interest of the said Joseph in the patented invention.

William A. Porter sworn to prove loss of the original assignment.

The last time that I recollect seeing the paper was when I read it in December, 1848, in this court, during the trial of the case. From that time to this I have never been able to find it.

I searched with Mr. Perkins, one of the counsel for defendants, one evening in his office. I applied at Mr. Mallery's office. Mr. Sheppard, with the assistance of Mr. Mallery, searched among my own papers; I had charge of all the papers as counsel. If it was anywhere, it should have been in my possession.

Mr. Samuel Battin affirmed.

I have made diligent search for the assignment—an unsuccessful one. I believe it to be lost.

Enos Meyer sworn.

I saw the original assignment from Joseph to Samuel Battin. I signed my name to an agreement, an assignment from Joseph to Samuel Battin. It was delivered to Samuel Battin at the time at our store, corner of Second and Noble. I think it was in 1844.

The exemplification of the assignment, under the hand and seal of the Commissioner of Patents, dated 14th February, 1844, recorded 13th March, 1844, was read in evidence, the defendant objecting. See copy annexed hereto, marked D.

George R. Taylor sworn.

I reside at Minersville, Schuylkill county. I've been superintending miners. I had a mine of my own last year and year before. I have been acquainted with the Battin breaker since 1846. I have seen it in operation in Schuylkill county. I have been at Mr. Taggert's mines in Schuylkill county—James Taggert, the defendant. I was there in the latter part of March of the present year. He has Battin's breaker. I saw coal that had been broken upon it. I should suppose the breaker had been up several years. Couldn't state how long. It has rollers with teeth; the rollers are low and the screen is elevated. I saw the coal in the shoots ready to be transported to market. I've been at the mines said to be worked by Ratcliffe and Johnson; they are situated on the Little Schuylkill, above Tamaqua. I paid a visit to the mines in March last. I saw a coal breaker there; they had Battin's breaker. There was some coal in the shoots that had been broken upon it; the shoots below the breaker. The shoots are intended to shoot it into cars, to be sent off to market. The breaker appeared to have been there a year or so, and in use. I have been at the mines of Hughes and Darling, in the latter part of March last. That is called the Battin breaker, though it is perforated with teeth There are perforations in the cylinder, between the teeth—three cylinders. The upper one is solid, and the two lower are perforated. All have teeth, but the two lower ones are perforated. I was informed it was put up in the summer of 1848, by several men working about the mines. There *were* some coal in the shoots. They were breaking at the time. I saw it in operation. The rollers lie low, and the coal is elevated to a screen above. There is a railroad then from the mines, connecting with the Mill Creek road; thence to Reading; thence to the city. The perforated cylinders are hollow inside. In March last, I should judge, there were between sixty and one hundred machines in operation. I've used one of Battin's machines in my own business. A ton of coal can be broken in from one to two minutes. They are said to break as high as 300 tons per day; from my own knowledge it can. I mean ten hours, when I speak of a day. If we break 300 tons a day, it would cost from four to five cents per ton; by getting down to 100 tons, much more. I've broken coal by hand on the planks. A man accustomed to it will break from two to three tons a day—a man who was used to it. It cost in the old mode from twenty-five to thirty-seven; owing to the nature of the coal; some fractures better than others. Battins, I think, have been charging a cent per ton for the use of their patent; they break by machine, except in small operations.

The waste by breaking by machinery is not near so great as by

breaking other ways. I have seen but very few machines differing from this, except the coffee mill. The indentations are square openings, large enough to pass through; the openings are about 2½ inches square. The machine is the same as this, with the exception of the perforations and the additional roller.

Cross examined.

I didn't see the machines all on the same day, but all within three days. I don't recollect the days of the week. I went there with the design of seeing the different kinds of improvements that were put up for my brother; he wished to put up improvements at Mine Hill; also for my own gratification. No one accompanied me. I didn't see Mr. Taggert on that day. I haven't personal acquaintance with Mr. Taggert. I only know it from those working about the mines that those were Mr. Taggert's mines.

I have no personal acquaintance with either Ratcliffe or Johnson. I didn't see either of them. I learned they were their mines from the same source I did Taggert's mines were his. I saw the rollers in operation at Taggert's mines. Ratcliffe and Johnson were not breaking the day I was there. I went down so that I stood alongside of them. I convinced myself that they were the Battin roller. The rollers are geared as rollers generally are geared. Rollers are generally geared with cog-wheels; some are driven by a strap attached to one roller; some are driven by cog-wheels attached to a small pinion. I couldn't say whether the teeth in one roller were opposite the space in another. It's a difficult matter, when rollers are in operation, to state how they operate, and the coal running through. I saw rollers at Taggert's mines. There is a mine worked at Port Carbon, said to be John C. Hughes's; not positive as to his middle name. I saw the rollers in operation there. I didn't see Mr. Hughes. I got the information from persons about there that they were his mines. His mines are at the lower part of Port Carbon.

Battin's breakers are the solid rollers, with teeth upon them similar to those, (pointing to machine.) The perforated rollers made by Staywood and Snyder are called by them Battin's rollers.

In breaking the coal by the rollers, we take the feeding of the rollers and the power in calculating the loss. I didn't calculate the wear and tear of machinery, nor the first cost. The cost is from $5 to $700, for the breaker and the screen, and putting them up. I include in the four or five cents the power—the working of the machinery. I can't give you the cost of putting a machine up; it's owing to the situation. They have them put [up] for $2,500 in Schuylkill county; some have cost $7,000. I couldn't tell what the wear and tear daily would cost. Mr. Bast, I think, could break three hundred tons per day. I think he has two breakers for different kinds of coal. I couldn't say how much coal per day is produced in Schuylkill county; it's owing to the demand. Sometimes they ship little broken coal. I couldn't say that seventy-five tons is more than an average yield.

Continuation of cross examination of George R. Taylor.

I saw the rollers of Ratcliffe and Johnson; the cylinders were solid. I am sure of it. The rollers were enclosed as most rollers are; I saw them from above and below; some use five, some ten, some fifteen, some twenty horse, to turn the rollers; the cost of putting up rollers depends *to* the locality; many have large frame works; others have stone foundations and smaller frame works. I never broke coal myself by the day; I have superintended men; I never had a man to break as much as six or seven tons a day; it would average from $2\frac{1}{2}$ to three tons a man could break per day. I never was the agent of Mr. Battin; the mines of Hewes and Darling are at Port Carbon; John Hewes is mining coal there; Darling and Hewes are mining coal there; I know that as I know any thing else; when I see a thing, I am convinced of it; I never saw Darling mining coal there; I know he is engaged in the mining of coal; I know every body else in that region is engaged in the mining of coal. I have heard frequently that Mr. Darling was engaged in mining coal; I knew him to be selling coal; I can't say who is selling coal with him; he is selling coal at the city.

Re-examined.

I have had men employed by myself, breaking coal by hand; I was engaged not quite two years in 1848 and 1849. The teeth came in the interstices between the teeth on the opposite roller in Johnson and Taggert's mines. The teeth came opposite the perforation in Hewes's and Darling's; the machine was in motion at Taggert's; I saw its motion; I am confident it's a Battin breaker; have no doubt at all about it; I think I have seen and examined upwards of sixty of Battin's breakers.

George W. Coal affirmed.

I reside at Philadelphia; I am a clerk in the office of the Little Schuylkill Navigation and Coal Company. The road is in Schuylkill county; my business as clerk frequently calls me there during the year; I know Mr. Taggert; I know both Ratcliffe and Johnson; Mr. Taggert's mines are at Tamaqua, Schuylkill county, in the town of Tamaqua, about two or three hundred yards from the dwellings, right alongside of the railroad. Mr. Taggert is the tenant of the company I have mentioned; he makes payments to the company through me in this city; he has made payments during the last year; he has a coal breaking machine at the mines; I have never examined the machine, and never heard any particular name given to it; Ratcliffe and Johnson's is about a mile from Tamaqua, and also at Tamaqua. They are tenants of the company also; they have two machines. I have collected rents from them within the last year; one of them is within two hundred yards of Mr. Taggert's, and another the continuation of the same mine of

Mr. Taggert's about one mile west. They pay something every month on account; they have done so for a year or fourteen months back. Mr. Taggert has a written lease from the company. The rent is so much per ton, according to the size.

James Codrington sworn.

I reside at Tamaqua; I live not over a quarter of a mile from Mr. Taggert's mines, and a little over three hundred feet from the mines of Ratcliffe and Johnson. I am in the employ of the Little Schuylkill R. R. Co., and have been so for two years. I superintend the coal mines, worked by tenants of the company; Mr. Taggert and Messrs. Ratcliffe and Johnson are tenants of the company; the vein worked by Mr. Taggert is called the F vein; those worked by Ratcliffe and Johnson are called the D and C veins; they have worked them since I was first employed by the company; whenever the vein gets faulty, I attend to that; the company charges so much a yard for driving their gangways through these faults; they've got breakers at the mines of Taggert and Ratcliffe and Johnson; I have seen the engine at work; the breakers are concealed; I never saw them at rest; I have been around the screens when they were at work; I have been subpœnaed by the defendants; I believe the rollers are cast iron rollers, though I never saw them; I have seen Ratcliffe and Johnson's old breakers; they were Battin's; I have only to do with the mines; Ratcliffe's is about twenty-five yards from the mouth of the mines, Taggert's is 250 or 275 yards; I have been in the mines once in a couple of weeks since I've been employed there; I've seen Taggert and Ratcliffe and Johnson there frequently; I've seen the coal coming out of the mines, some lumps, couple of hundred weight; about the one-third of the coal goes through the breaker; I've seen the broken coal under the screen; I've seen it in the cars going down to market; I don't think I could tell that broken by hand from that by machine; they're in use every day except there's an accident. Mr. Taggert's machine assorts the coal into five different sizes; lump, pea, chestnut, egg, stove, and broken; the breakers thrown out by Taggert were solid, with teeth in them; there's said to be holes in the present rollers; I am no machinist; Henry Waters put them in; I can't see any difference in the coal since; it's capable of breaking seventy-five tons per day; I don't know that I've ever known Taggert to break over that; Taggert has sent as much as 450 tons per week.

Taggert uses steam power for breaking; I think they call it twenty horse power; I never saw higher power.

Cross examined.

The rollers were thrown out about twelve months ago; I think they were thrown out because they made so much dirt. You couldn't see the rollers, at Ratcliffe and Johnson's, without you'd pull down the planks around them; it's dark at the bottom of the rollers; it isn't

light enough to see the rollers if the planks were torn off; it is boxed up all around for the shoots; the planks exclude the light. I should think the rollers were down five or six feet from the top of the box. The pea, chestnut, and lump coal are sent as they come out of the mines; the screen makes the different sizes of coal. Three sizes of coal pass through the breaker—stove, egg, and broken. I haven't seen the breaker at either of the mines of Ratcliffe and Johnson. They've sent the most coal from the upper mines, about a mile from Tamaqua.

George W. Cole, resumed.

Taggert, Ratcliffe, and Johnson pay fifty cents for lump, broken, egg, and stove; thirty-five cents for nut; five cents for pea.

Nicholas Bolliet sworn.

I reside at Tamaqua, Schuylkill county. I am the weighmaster of the coal that passes over the road of the Little Schuylkill Coal Co. Taggert's mines are about a mile north from the scale; one mine of Ratcliffe and Johnson is about 100 yards further; they have another west of that. I have been there as weighmaster since 1846, in April. The object of weighing is to give the correct number of tons shipped by each tenant of the Company; the weighing is all done under my immediate personal inspection. I can give a statement of the number of tons shipped by Taggert in 1849; the number of tons shipped by Taggert is 14,558; the last four months of that year about 4,500 tons, as near as I can come to it by calculation; the first three months of 1850, from 1000 to 1200 tons; the quantity is less during the winter months. Ratcliffe's and Johnson's two mines, in September, October, November, and December, of 1849, between 6 and 7000 tons; first three months of 1850, about 8000 tons. I am personally acquainted with the parties. I should judge about one-fifth was unbroken (lump) coal, out of Ratcliffe and Johnson's; about one-fourth out of Taggert's. By lump coal I mean that thrown over the shoot, which don't go to the breaker. The coal is conveyed in open cars. I have been frequently at all the mines; I have been at some of them every day; I have seen the machines in operation; they're kept in constant use, except in case of a break down; they run about eleven hours a day; ten or eleven hours. I've been on the screens and heard the coal broken. Mr. Taggert's rollers are cast iron rollers; I saw them during a repair. I saw the teeth of Taggert's breaker; there were two rollers; there were two rollers that had teeth, but whether they were the same as those of the model I didn't notice. I have seen coal broken by hand; I don't think I could tell the difference between the coal broken by hand and by machine. I saw wheels like those on the model, and a flying wheel like that on the model.

Cross examined.

The most of the chestnut and pea coal does not go through the breaker. I only gave the one-fifth lump coal out of the quantity sent by Ratcliffe and Johnson. From the mine that's a mile west they send the most coal. I don't know what kind of a breaking machine Ratcliffe and Johnson use; they break the coal the same as the rest, by steam power. I don't think the rollers can be seen at Taggert's mines without a light; they are boxed up for fear persons will fall in. They sometimes send more lump than broken, according to the demand; I don't think there has been more demand for lump than broken coal. I never looked at the rollers; I have seen them put in as large as that box is square. If I had stopped them from shovelling in I might have seen the rollers. I should judge the aperture was as large as that in the top of the model.

November 6, 1850.

Richard Carter affirmed.

I reside near Tamaqua, in Schuylkill county. I am engaged in the mining business; I have mines of my own now in operation; we have one called the Battin breaker; the breaker was put up before any agreement; we entered into an agreement for use of it afterwards. My mines are about 100 yards from Mr. Taggert's, about 200 yards from Ratcliffe and Johnson's; they on one side of the Little Schuylkill, and we on the other, about a mile and a half from the other mine of Ratcliffe and Johnson. I know all the defendants personally; I have frequently visited their mines; within the last year several times. Mr. Taggert is among my nearest neighbors. I have seen Mr. Taggert's and Ratcliffe and Johnson's when in operation; I have seen coal broken by that machinery. We've frequently conversed about the coal business. I have been near enough defendants' machines to see what kind of breakers they had. Mr. Taggert's is a breaker with toothed rollers—iron cylinders operating in the same manner as mine does. My machine is geared by a belt from the engine. Mr. Taggert had this machine up during the last year. The rollers work together like those of the model. I have been at Ratcliffe and Johnson's mines when they have been breaking coal; they put their breaker up, I think, in 1847. That (the model) is a breaker like mine and Mr. Taggert's; gearing slightly different; they use the cog-wheels, and have a screen attached to their breaker. John and Richard Carter is the name of our firm; I superintend the works myself; reside little over a quarter of a mile of them. We shipped last year about 64,000 tons. We are in a mile and a quarter; I should think Mr. Taggert was in a mile, probably not as much as the mine near us; Ratcliffe and Johnson are in nearly a mile. We have two mines, two operations, two breakers up. Mr. Taggert don't do as much business as us. Taggert has one mine; his machine is going every day, except

in case of accident, about ten hours or a little over. Ten hours we call a day's work. Mr. Taggert has from ten to fifteen hands employed outside of the mines. I suppose it might (the breaker) break 200 tons per day; we break from 100 to 150 tons per day; greater part of this goes through the breaker. Ratcliffe's capabilities are about the same as Taggert's. Battins have charged two cents. We paid the Battins one cent per ton by agreement. The plates require renewing once a year. Our coal is hard coal. A new set of plates, cylinder and all, would cost from $200 to $250.

Cross examined.

Those cylinders are cast iron; the teeth are solid with the cylinder; the solid cylinders are not made separate; the cylinders are all cast hollow. I have been engaged in the coal business since the spring of '39; I have broken coal by hand; from '39 to '44 or '45, I had charge of men who broke by hand; to do a small business, it is cheaper to break by hand; in the breaker you must man every place with men; in a small business, it is as cheap or cheaper to break by hand; 20,000 tons per year is considered a small business now; it was considered a middling business in '42 or '43, to break by hand; if the coal was very hard, and had to break it all, the breaker would be cheaper than by hand; in a business of from 15 to 20,000 tons, it would be cheaper for Mr. Taggert to break by hand. I have seen the coffee mill breaker in use. I believe Mr. Taggert could break his coal cheaper with the coffee mill, than with this (breaker.)

I saw the rollers at Taggert's, and Ratcliffe and Johnson's, before they were put in; I did not see them after they were put up, because they were always shut up to keep the coal from flying about; eight and a half or nine inches square that opening is, about five or six feet above the rollers; the rollers are enclosed below with planks; it is dark inside of that box; a person can't see what the rollers are, without candle-light, in day time; can't see our rollers from below, even by candle-light; I think they still have the same rollers they put in. At one of Ratcliffe and Johnson's mines, they have one roller and an upright plate; there is but one roller; the roller has some kind of a cutter on it; the plate has holes in it, and the lower part of the plate has teeth; the plate is stationary. The cost of putting up the breaker and all appurtenances, is from $5 to $10,000. The whole fixtures of Ratcliffe and Johnson cost from $5 to $6,000. It would depend upon the size of the business how many men they would require; I should think Taggert would employ fifteen to twenty hands. We employ about forty hands above ground. The proportion to be broken would be about one-third; the other two-thirds would not need breaking; two-thirds we pay one cent per ton for; a man could break four or five tons of coal; a man could break from five to eight tons of Mr. Taggert's coal; a man couldn't exceed from five to ten tons per day, as it comes out of the mines; a good man could break from five to ten tons per day of lump coal; I believe a good man could break as much of

lump coal as that of the general run of the mine, and the proportion of lump coal is about one-third; the demand for lump coal has not been so strong this last year as in '47 and '48; Ratcliffe and Johnson do not, I believe, permit their lump coal to be broken; we have to follow the market; sometimes more lump coal is required than others; Ratcliffe and Johnson do not permit all their large coal to be broken; I can't say what the whole cost would be per year of the breaker; I should think the whole cost of repairs per year at one of our establishments, from $5 to $700.

Re-examined.

I don't know any person who sends away 20,000 tons, who breaks by hand. We use sometimes chestnut and nut for fuel for the engine; the same as we send to market, from $1 to $1 50 per ton value; we don't go to as much expense when we break by hand as by the breaker; the cost by breaker would be more than that by hand; I couldn't tell how much it costs to break and screen a ton of coal; sometimes we use horse-power, and sometimes hand, for the screen; I suppose Mr. Taggert could break it by hand for from 18 to 20 cents per ton, and prepare it for market. When speaking of breaking so much per day by hand, I mean the breaking operation exclusively, and not screening.

There are a number of persons in Schuylkill county without any local residence. I don't think that it is more injurious than any other business to break coal.

I saw Mr. Taggert's rollers before put in, near where they now are, I've seen them when not in operation; it requires the same quantity of hands to bring the coal from the mines when breaking by hand, as by coal breaker; when we break by hand, we don't require so many men as when we break by machine; we have, in breaking by rollers, to hoist the coal up, so that it can go into the breaker; when we break by hand, we have to shovel the coal into the car; the object is to get all the height we can, so that the water may run off. Mr. Taggert uses an elevator; requires a larger screen to screen by steam than by hand. I have seen 100 tons of coal lying out of the mine before reaching the breaker.

George W. Cole, resumed.

Amount paid by Taggert for mining: June 29th, 1849, total amount of coal, 4,736 tons; quarter ending September 30, 3,992 tons; quarter ending December 31, 3,058 tons; quarter ending March 31st, 1850, 239 tons; quarter ending June 30, 3,157 tons, all excepting nut and pea—nut coal, 695 tons, pea coal, 883; quarter ending September 30, 2,457 tons, lump, broken, egg, and stove—nut coal, 618; pea, 916; quarter ending December, lump, broken, egg, and stove, 1,821—nut coal, 518; pea, 718; quarter ending March, lump, broken, egg, and stove, 164—nut, 28; pea, 46. I don't suppose Mr. Taggert made 1,000 tons of lump during the whole time that's mentioned.

Ratcliffe and Johnson's D vein, nearest Taggert's; quarter ending 30th June, 4,210 tons, four sizes—nut, 538; pea, 797; quarter ending September, 1849, 2,385—nut, 225; pea, 529; next quarter, 1,724 tons—nut, 335; pea, 404; next quarter, 1,238 tons—nut, 177; pea, 219.

Vein F.—First quarter ending 30th September, 1849, 1,592, pea, 385; quarter ending December, 2,341—nut, 198; pea, 655; March, 1850, 3,086 tons—nut, 420; pea, 829.

Davis Pearson sworn.

I am now a partner of Mr. Gideon Bast, in the coal business. We have in use one of the Battin breakers, and have had four or five years. I have received at Philadelphia the coal broken on the breaker and sold it. My business in Philadelphia will average 7,000 tons per year at one yard, and the other yard not over between 5 and 6,000. I don't know that I'm acquainted with the cost of breaking by the machine; Mr. Bast knows all about that. There is a difference, as regards appearance, between coal broken by hand and that by machine; that from the breaker sells the most readily. I could easily distinguish coal broken by hammer and that broken by machinery; the difference is, that the coal is more regular. It is impossible to break coal by the hammer as nicely as you can running it through the breaker; there would be no difference as regards price. If I had two heaps in my yard, one produced by the hammer and the other by the breaker, that produced by the breaker would sell and the other would remain.

I was at breaking by hand for five years. When I say three tons per day, I mean not move it from its position, could be broken by hand. I believe I am the oldest hand at the business in Broad street.

Cross examined.

The coal broken in this city was broken on the planks in my yard. I've had no experience in breaking on perforated plates; I have never seen perforated plates. I might have received coal which was passed through them. A man could not break over three tons per day, under the most favorable circumstances. He would break his three tons and screen them; part of the coal would be twice handled and *twice* not. The screens were upright. I don't think breaking one piece of coal on top of another would injure the uniform appearance of coal; the coal which passes through the screen would be uniform, if it had been assorted.

Gideon Bast re-examined.

I have one of the Battin breakers in operation there; I think the first one we put up was in 1844 or 1845; it was the first Battin breaker put up in Schuylkill county. I think we commenced putting up the breaker in January succeeding the date of the agreement, 14th December, 1843. We broke some coal on perforated plates; I can't recollect the cost of breaking on the plates. I paid from 20 to 25 cents per ton

for breaking on the plates; I've paid 30 cents per ton to break it on the wooden planks. Battin put up the machinery at his expense, and for 20,000 tons we were to pay him twenty cents per ton. My breaker is a different one from any in the region, four rollers; I suppose two pair of rollers will break 150 tons per day. The cost by the breaker is from twelve to fifteen cents per ton, if the breaker is worked up to its full capacity. There are two rollers above two other rollers, for the purpose of reducing the size of the coal before it reaches the lower one. We have from 50 to 60 men employed at the breaker. We have shipped 2,000 tons per week, but we have two breakers converted into, or rather two collieries emptying into, one breaker; we are now breaking over 300 tons per day. We had four plates about eight feet square, and six men breaking. The breaking plates wouldn't require so much room as the breakers; some of the men had to mask their faces while at work on the plates.

Cross examined.

It costs us less breaking 300 tons per day than 50 or 60 tons; the less you do the more it costs. We have loaded 105 cars, about four and a half tons in each car; there might have been some coal left in the shoots on the day previous; this was done with two sets of breakers. We never take that into consideration in *one* county. We don't take into consideration wear and tear, nor original cost. The rollers would last two years; not the rollers which wear out, but the teeth. Our colliery is red and white ash. Last year we averaged more white ash; this year The white ash is the hardest coal. The rollers, with white ash, would last about a year and a half; when worn out we have to put in new rollers. Our breaking machinery cost us $15,000. The expense would be more of the breaker than the plates. If capital, wear, and tear, were taken into consideration, breaking plates would be cheaper than breakers. I believe if breakers had never been introduced into Schuylkill county we'd all be better off. If we broke by hand we couldn't produce as much in the same time as by the breaker. I pay $5 50 to workmen, sixty in number; the coal for the engine costs about $1 50 per ton. By the assistance of enough men, the same amount of coal might be broken as with the breaker. If my business varied from 2,000 to 1,500 tons, we would have to have men enough to do 2,000 tons. You can't proportion the force about the breaker to the work; there is a certain number you must have at the breaker.

Daniel R. Bennett affirmed.

I reside at Minersville, Schuylkill county. I have been engaged in the coal business for ten or eleven years; I've been the agent of Messrs. Battin, for collecting sums due for the use of their patent. I had coal broken by hand, when engaged in the business; it cost from 30 to 32 cents, breaking and screening. I've seen a great many of Battin's breakers in operation; about fifty machines went into operation, after

the issue of the patent, in Schuylkill county. I have known a ton of coal to be broken in a minute and a half; by hand it took a man one hour and a half to two hours. A man could break five tons a day, on plank, a good hand, without screening; I think they didn't generally come up to that. Five tons I would consider a good day's work on plank. The plaintiffs charged originally two cents, and subsequently one cent per ton. The rollers and pinions, if not too high, (the foundation,) might be put up for $600, exclusive of shoots, screens, and engine; without foundation, $400. An engine, ten or fifteen horse power, would cost about $2,000; fifteen horse power is sufficient to drive screens and all. I have never known above twenty horse power. An engineer would be requisite at $1 50 per day; two men above the breaker, $1 each, $2; ton and a half pea coal, at 50 cents per ton, 75 cents; one fireman, $1; boy, 25 cents; interest of cost of breakers and engine, 50 cents per day; wear and tear at one cent per ton; aggregate, $6. At $6 estimate, 200 tons per day would be broken; four cents per ton actual cost. I have broken upon the perforated plates by hammers used by hand; very little difference in the cost from breaking on planks. There may, in some instances, have been five cents per ton difference less than on planks. A man would break probably six or seven tons on the plates. The wages varied from 83 cents to $1 per day, sometimes as low as 75 cents—average 83 cents. I know one machine that is driven by horse power, that cost, including shoots and every thing, not over $500; two or three hundred dollars more would put up one of five-horse power; calculated to break fifty tons per day—the one-horse one.

Cross examined.

I don't know of any machine that has broken 200 tons per day.

Examination resumed.

I mean by a day ten hours. It would require as many men breaking by hammer as by breaker; wouldn't require any difference in the size of the shoots for breakers. My information is from observation, and information from others at the mines. I abandoned the business in 1843. The coal passed from the screen into the wagon. When I saw the coal pass through the breaker in one and a half minutes it was not pulverized; I examined it particularly; saw it put into the breaker and come from it. I think the coal was not pulverized, and lost in passing through the breaker. I would not be required to drive the rollers faster than they are usually driven to break a ton of coal in two minutes. There have been accidents to the rollers; teeth knocked off. Accidents frequently occur; it stops operations until they are repaired and renewed. I have made no estimate of loss of time by accident. I have no agency for the Battins now; I gave it up in 1848.

The coal broken in one and a half minute was broken at Mr. Kear's operations on Wolf creek.

Jesse Turner sworn.

I reside at Port Carbon, Schuylkill county; I reside about a quarter of a mile from Darling and Hewes's mines; those mines are situated at Port Carbon; they are situated on the Mill Creek railroad; I've been at those mines frequently—pass by them every day; the points of the rollers can be seen; they have teeth; the cylinders are cast iron; one of the rollers I am certain is perforated; this machine has been up about two years, I think.

Cross examined.

I never understood Mr. Darling had an interest in mining; I don't know they had one at Port Carbon; Mr. Hewes always paid me the toll for the coal that went over the Reading road; I am acquainted with Darling and Hewes both, personally; I don't know that Darling is not engaged in mining, or that he is; I never heard he was.

George Hadesty affirmed.

I reside at Pottsville; I am the weighmaster on the Mill Creek railroad, over which a small portion of the coal of Darling and Hewes passes; the other portion goes direct to a landing of their own; in the month of December 1,163 tons passed over; in the month of November 30 tons passed over, in the month of February, 1850, 1,290 tons passed over; in the month of March 174 tons passed over; it was all broken coal, as far as I know; it was conveyed in open cars; this was a small portion to keep his mines going; the rest goes to his own landing; it was cheaper to send by canal at that time.

Cross examined.

Darling and Hewes's mines are close by the Mill Creek railroad; it is consigned in the name of John G. Hewes; Mr. Darling I know nothing about, for my part; I don't know whether he has any interest in it or not; I have always known them as Mr. Hewes's mines.

William Dehaven sworn.

I am a machinist, and carry on the business at Minersville, Schuylkill county; I've been carrying on business since 1838; in 1842 I commenced building steam engines; I have constructed coal breakers; the rollers, gearing, and plummer boxes cost from 5 to $600; it requires from ten to fifteen horse engine, sometimes as high as twenty; ten horse power is worth $1,000; fifteen, 1,400 or $1,500; twenty horse power from 1,600 to $1,700; the average cost of breaker, &c., excepting shoots, would be from 1,000 to $1,200; the foundations to hold the breaking machine fast costs from 125 to $150; I've known a car load of one and a quarter tons, clean coal, to be run through in one and a half minutes; from 300 to 400 tons could be run through it in ten hours; I would keep the breaker in order for one cent per ton;

then they were bound to break from 40,000 to 50,000 tons in a season; that was part of the offer, and they didn't take me up; they generally use pea-coal; two tons would keep them running ten hours; coal would cost about 37½ cents per ton; oil, from 25 to 37½ cents' worth per day; it would take four horse power to drive the screen alone; that would require one engine; that is done with the breakers; a pair of boilers will last from 16 to 20 years.

Cross examined.

I made no allowance for building the engine-house; it is necessary to have an engine-house, principally frame; cost, about 350 dollars would pay all expenses; I think 150 tons per day can be broken and screened per day; Messrs. Bast could break from 250 or 300 tons per day; their screens could do that, and I'm certain it could be put through the breaker; my own opinion has been, the quicker the coal passes through the breaker the less waste.

George Emerick affirmed.

My place of business is in Callowhill street, west of Broad, in this city; I have a coal yard there; I have received coal broken by the breaking machine, and sold it; I've been engaged in the coal business 22 years; coal broken by machine invariably brings a higher price in the market than coal broken by hand; I can readily tell the difference; the coal is no better, but it looks better and sells better; I would at any time give five cents per ton more for it; I have received coal from Ratcliffe's mines; I was in business when coal was broken by hand, and have sold it.

Cross examined.

It was formerly the practice of breaking coal; I was formerly in the habit of receiving coal broken by hand; the last I received was from Stanton and Bass; I charge my customers no more for the coal passing through the breaker than for that broken by hand.

Re-examined.

I would rather buy that (breaker) coal; it sells more rapidly; it is rounder; easy ocular demonstration can be had of that fact.

Joseph Collins sworn.

I reside in Philadelphia; I've been engaged in the retail coal business upwards of six years; my place of business in Callowhill, west of Broad; I have received coal that was broken by machine; from the readiness of the sale, I would give five cents per ton more; I could easily tell the difference between two heaps.

Cross examined.

The fracture is longer than that passing through the rollers, and especially the white ash; the fracture depends on the quality of the coal; white ash has a longer fracture than red; the impure coal has the longest fracture; white ash is the most slaty.

George R. Taylor recalled.

The teeth at Darling and Hewes' were teeth similar to those (of the model, perforated.)

Cross examined.

The mines of Darling and Hewes; I know it as I know any thing else; it is likely I might have heard them called Hewes's mines; I think I have heard them called Hewes's mines.

By Mr. Hughes:

It was in the day time I was at Ratcliffe and Johnson's mines; the opening in the hopper was large enough to take in a lump of coal ten inches square; I could see the rollers.

Daniel R. Bennett recalled by defendants.

In 1832 or –'33 I had coal mined and loaded for 62 or 65 cents per ton from one mine; I threw the nut coal into the dirt heap; at that day, there was no demand for small coal then.

Here the plaintiffs closed.

And the defendants, to maintain the issue on their part, offered the following testimony:

Defendant's testimony.—R. M. Hoe sworn.

I reside in New York city, 309, East Broadway; I am an engineer and machinist; I am engaged in the manufacture of machinery of various kinds; prior to 1835 we repaired an English machine for crushing bones, consisting of two rollers geared together with spur wheels; the rollers were formed of a series of plates, iron and steel alternate; the iron were circular, and the steel like circular saws; the plates or discs, and the saws, ran alternately like the model; at the base of the tooth was the disc; the teeth are not precisely as the teeth of the model; there was a simple pair of spur wheels on the ends of the cylinders; the teeth on one cylinder always occupied a line intermediate between those of the other; the teeth were the width of the plate, about half an inch; the rows were about the same distance; the tooth was square at the base, about half an inch, and about half an inch long; the cylinder was about two feet long, diameter from eleven to twelve inches; the bones thrown on were the usual bones of animals; the object was to pulverize them for manure; there were lumps as large as a pea, but the great mass was dust; the machine both broke and ground; if the rollers were set further apart they would have broken.

R. M. Hoe sworn.

One roller should not run faster than the other. The rollers needn't be going in contrary directions to break. Revolving at different velocities would promote grinding; revolving the rollers in the same direction would defeat the object of breaking. If the teeth in the rollers came together, the machine would stop. It is a mechanical necessity that the teeth in one roller should come into the space in another.

Cross examined.

If the rollers interlocked, there would be a tendency to crush the coal.

Tobias K. Winterstein sworn.

(The defendants propose to prove that, in 1842, Mr. Winterstein called at the place of Mr. J. Battin, in Kensington, when they had a conversation about coal-breaking machines; when Mr. W. communicated to Mr. Battin that he was the inventor of toothed rollers, geared in all respects like these, and also that he used the third roller; that Mr. Battin replied, that he could use a third roller, too, if necessary, but that what he made claim to, and intended to have patented, was merely the combination of the rollers with the screen apparatus.)

Objected to by plaintiffs.

Offer overruled and testimony excluded.

Defendant excepts.

Aquila Bolton affirmed.

I reside at Port Carbon, Schuylkill county. I am not engaged in the coal business. I have been about 18 years. I gave up the business two or three years ago. I have had coal broken by hand and by a species of roller of my own invention. I had a contract for a length of time at 12½ cents per ton, breaking on perforated plates. I'm not quite sure, if at one time I didn't get it done for a little less. I don't know that there would be any difference in appearance between coal thus broken and that by machine. The slate could be better selected. When broken by rollers, it is broken faster than by hand. It is distributed on a long platform; the breakers can then readily perceive a piece of slate, and they throw it aside, because it is easier to throw it overboard than to break it; coal broken by hand is freer from impurities than coal broken by machine. I obtained a higher price for coal broken by hand; on some occasions, I got from ten to twelve and a half cents per ton more for it than for machine-broken coal. It always obtained a preference. I've frequently seen the Battin machines in operation. Most waste in breaking by machine, considerably; probably four or five per cent. difference. White ash coal has the sharpest, most angular fracture; less waste in white than red ash. The softer the coal the more waste.

I know Thomas S. Darling. I have known him something like

two years. He is not engaged in mining coal, that I know of. I never heard that he was. I know where Mr. Hewes's coal mine is. I am unable to say who the property belongs to. Mr. Hewes is engaged in the mining operations. I never heard there was any one else. I live in Port Carbon. Mr. Darling does not live in Port Carbon. Mr. Darling is connected with Mr. Hewes, as far as I've understood it, in the purchase and sale of coal here in Philadelphia. Mining is not necessarily nor ordinarily separate from selling coal. It was pretty soon after the introduction of the Battin machines, I had the contract for breaking by hand—I am inclined to think prior to their introduction.

Cross examined.

I have known him in Philadelphia and Port Carbon. I believe Darling and Hewes, in this city, sell Hewes's coal. My mine was about two miles above Port Carbon, on the Schuylkill. I suppose I was working that colliery about 12 or 14 years. The planks were not cheaper than the plates. My coal was rather hard for red ash. When I speak of 12½ cents difference, I don't include the sizing and screening. The contractor was to break 50 tons a day. William Gold is his name; he lives at Pottsville, Schuylkill county. He is now employed by Mr. Boyle. I screened by horse power at my landing. It is four or five years since I broke on plates. I got the coffee mill after that mode. I think I continued breaking on the coffee mill about two years. I keep the post office at Port Carbon. Mr. Gold was merely to break the coal; not to any particular size. He was to break it to broken coal size. He worked from 12½ cents per ton, for the best part of a season, from April to November. I supplied the coal to him on plates. All he had to do was to break and load the coal. I speak of the waste from observation. The vein I worked is known for ten miles at least. The coffee mill was fed like Battin's breaker. The rollers make greater waste than the coffee mill. All that passed through the perforations in the plates he was paid 12½ cents for. My coal was all red ash coal.

Mr. Winterstein recalled.

I put up the machinery, in the mine of Mr. Hewes, at Port Carbon. The contract was made by John G. Hewes; I think it was in writing. I know Mr. Darling. He has not any interest in that mine, to my knowledge. Payments were made by Mr. Hewes to me. I put up the machine without the consent of Mr. Battin.

William Donaldson sworn.

I reside in Tamaqua, Schuylkill county; am engaged in the coal business. I've been at Tamaqua nineteen years last Spring. Was engaged in mining lead ore before I came to Tamaqua; am a native of England. I've broken coal over perforated plates for five or six months. Prior to that I superintended the mines for the company about twelve months. It cost to break coal over perforated plates from 12 to 16

cents; that included screening. A man can break from seven to nine tons on perforated plates, taking the coal regularly; not break and screen. Screening is separate from breaking by hand power. The screening of coal is sometimes done by horse power and by hand. I think three horses would turn the screen while twenty men were breaking. I could get the coal broken from twelve to fourteen cents, without screening. I have had experience with the breakers. I broke coal myself, first with a coffee mill breaker; next with solid rollers, fluted; next with rollers, with segments, holes, and teeth. It would be difficult to tell which was most costly. I had my coal broken cheapest by horse power. The coffee mill roller was the cheapest. It would cost $3 50 to break 50 tons per day. I'm not well prepared to answer the question. To do that work, would require one engineer, $1 25; two men at the hopper, at $1 per day, $2; the oil; two men to dump the coal, $1 per day. I do at my own mines from 700 to 900 tons per week. I use tooth rollers with segments; put 75 tons through per day. My coal costs me from 20 to 25 cents per ton to break it, screen it, select it, and put it in the cars. I don't think there is much difference between putting on the plates. I could do it as well by hand as by breaker. My coal would be cleanest broken by hand power. In breaking by breaker, the coal is confined to one place, so that not more than two or three are able to get to it to put in the breaker. While breaking by hand, it has to be spread on plates, and requires more men, who pick out all the slate. It is consequently in a purer state when it comes out of the screen. Breaking with rollers makes more waste than by plates or hand; from four to six per cent. more. When I worked at it, I got $1 per day. I could break seven or eight tons. I don't include the interest on the money paid for the engine. I employed more men when I broke 120 tons per day, than when only 75, in proportion. I have a pretty large establishment; it's larger than Ratcliffe and Johnson's. Carter's is the largest. The men who put the coal into the breaker are ordered to pick out the slate. They are not so able to do it as when spread out on a platform. In my estimate I don't include wear and tear of machinery; make no allowance for waste. I think hand power would be a cheaper way of breaking than by rollers, taking into consideration original cost, waste, &c. The fixtures are now all put up; money all expended. The company having done this at our request, would not go to the expense of pulling it down and putting up new fixtures, and therefore I use the breakers. I think more coal could be broken by breakers than by hand power. There would be no difficulty in constructing a platform large enough to do as much per week as I now do with rollers. Mr. Carter has three collieries, but two sets of breakers. They have the largest vein in our region; that is the reason they can do more business than any one else. I've used coffee mill breaker about three years; how long it was in operation before that, I can't say. The coal that I broke by coffee mill is cheaper than by the rollers. The coal was good in appearance. The breaker produces decidedly the most dirt. I know

the rollers produce more dirt than the coffee mill, from the men employed to take it away.

Cross examined.

The faster the breaker is turned the smaller the coal is made. The fixtures, in breaking by hand, would have to be extensive; have to have a large platform; fresh dumping places. When I broke by plates, I was only elevated 20 feet from the railroad. I am now fifty feet high, if I recollect right. I broke by hand from six to nine months. I used the coffee [mill] from six to nine months; the breaker, since the coffee mill, from two to three years. I am tenant of Little Schuylkill Company. They had put up Ratcliffe's, Carter's, before mine were put up. I could not state I had seen 25 or 30 up before mine; they were common, and pretty well known. I did not apply to the Little Schuylkill Navigation Company to take down my machine. When I sent twelve cars of coal, three were lump coal, when I used the perforated plates. The coal is screened before it goes to the breaker. I asked the company to put up the rollers. I've had them up for the last three years; never asked the company to pull them down. I have been conscious for two years and six months I have been losing money. I have never made any estimate of loss. I can't say what platforms would cost; I don't recollect the inducement for asking the company to put the breakers up. If I knew as much then as I know now, I never would have asked the rollers to be put up. It would take, on the plates, fifteen or sixteen men to break 120 tons, together with the same number as with the breaker. I have never paid to the patentee for the use of the machine. I have contributed money to defend this case. We find the breakers and put them up. We pay for the ten-horse engine. The company put up the wood work. I paid $1,800 for the breaker, engine, and screen, and discarded coffee mill for $500.

Re-examined.

The same amount of dirt is thrown on the plates as into the hopper. The coffee-mill breaker is not large enough to do the same amount of business I now do. I think there would be no difficulty in getting a coffee mill of sufficient size to do the same amount of business I now do. Only occasionally we have to rebreak our coal. The waste is greater by breaking through breakers than by plates.

Vincent Smith, sworn.

I reside in Bucks county; am acquainted with Mr. Darling; have known him all his lifetime intimately; he is engaged in the coal business, buying and selling coal. He is not engaged in any other business that I know of. I don't think he is engaged in mining coal. He is engaged with Mr. John G Hewes, of Pottsville. Mr. Hewes mines coal; his mine is near Port Carbon.

Cross examined.

I have never seen articles of partnership. I have seen the books kept here; never saw the books kept at Pottsville. I have conversed with both Darling and Hewes about this business in Schuylkill county. The firm buy the coal in Schuylkill county The partner at Pottsville purchased the coal.

I never heard that Mr. Hewes sent his coal to any one else than Mr. Darling.

George H. Potts, sworn.

I reside at Pottsville. I am in the coal business. I've been in the coal business almost 22 years. I have had coal broken by hammers on perforated plates. I think it cost me from 25 to 30 cents per ton to break and screen coal and put it in the cars; nearer 30 than 25. My coal was red ash. I have had the same coal broken by breakers. The rollers cause the greatest amount of waste, decidedly. I have never used the Battin rollers. I have used one in connexion with the perforated roller of Haywood and Snyder; that had no teeth, (the roller.) With that fixture I made 20 per cent. more of pea coal. I can't say what amount of dirt was made. I first used the planks, then the plates, then the Haywood and Snyder roller; then their improvement with teeth. When Battin's roller was worn, it had to be all thrown away. The loss on the plates was about fifteen per cent.; the Battin roller, with Haywood and Snyder's, was 20 per cent. The loss on the plank would probably be more; this is only my opinion. I have broken white ash coal. The harder the coal the less waste. I should suppose there would be less in a perforated than with a solid roller. Five per cent. loss by waste is equal to 7½ cents per ton at the mines. The coal is worth *a* $1 50. The amount of coal broken and screened more than equals the amount of pea coal; dirt and dust are different. The dust comes out of the mine; dust is produced by the breaker. Some of that which comes out of the mine is coal dust. The dirt should not be called coal at all. I think the amount of dust always increases in proportion to the amount of pea coal. I have noticed rollers without perforations in operation. I have seen them frequently. I don't know any thing about the waste from the Battin rollers. The fixtures would have to be firmer if machinery was [to be used than if machinery was] not to be used. There would have to be only five or six feet difference in height when breaking by machine than by plates. I put up the first machine somewhat similar to the model. I put up a fixture over which I passed 150 tons per day; cost me $3,300 without the rollers; engine $1,000; ten-horse. I don't think the difference would be a great deal between producing 100 tons by machinery and by plates. The cheaper mode of breaking 50 tons per day would be by plates. If 150 tons per day were to be broken, it would be in favor of the machine. The machine is decidedly unprofitable where a small amount of business is done. I should think Ratcliffe and Johnson

would not be benefitted any by using the machine at 50 tons per day; 150 tons per day might be put through the roller. The machines are decidedly advantageous where a large amount of coal (is) to be produced. One hundred and fifty tons per day can be passed over the plates. My platform was, I think, sixteen feet long and eight wide. I have had as many as sixteen men on it.

The plaintiffs' declaration was here amended, on motion, by leave of the court. (For amendment see the record.) The defendants thereupon moved for a continuance of the cause, and objected to the filing of the amendment. The court refused the continuance, and noted an exception.

George H. Potts, recalled.

I think I have broken 150 tons on perforated plates; that was in 1843. I think the platform was sixteen or eighteen feet long, and eight feet wide. My breaker, to which I last referred, cost $9,200 with the engine; not without, as before referred to in my evidence. Mr. Hughes concedes perforated rollers, one Battin roller. It now costs me 19⅓ cents per ton with perforated rollers, if 150 tons per day. I estimate the loss by the rollers at 7½ cents. I thought breaking on the plates cost more than it did. I make the cost of breaking, screening, &c., 19¾ cents; includes putting in the cars 150 tons per day. It would be cheapest to break on plates. I assume the whole fixture will be valueless in ten years, adding all the wear and tear. Mr. Potts reads estimate—cost of breaking and screening coal on planks from actual experience:

Five men at 83 cents per day, and one boy, broke clean and put into the cars, four Reading cars per day, eighteen tons *a* 26 cents.

It is more expensive on the rollers with a small business. Any diminution below 100 tons per day would operate in favor of the plates. The rollers require a greater amount of power than the screens. I should consider that coal broken through plates would be preferable to coal broken by rollers; the coal is not so clear; there is more slate in coal passing through the rollers than through plates. I think they give, in Providence, a dollar a ton more for coal broken by hand.

Cross examined.

I have supplied coal to Providence this year; no lump. I don't know any one in Schuylkill county [who] sends lump coal. Mr. Bast's breaker, I think, was put up in February, '44. Mr. Potts put his up in August. I visited Mr. B's breaker after he got it up. The whole country went to see it; there was a kind of jubilee. I have entered into articles (of agreement) with Messrs. Battin for the use of the machine. It was some time after my breakers went into operation; I entered into articles a second time. I entered into an arrangement with them. I don't recollect entering into two agreements. Those articles are still in existence.

A paper was presented to Mr. Potts to be signed by him at Mr. Hughes's office, in Pottsville; I never signed them; I think my rollers are 30 or 36 inches; I don't know anything to prevent increasing

the size of the rollers; if you had the power, you could increase the quantity of coal broken.

I used the plates some 18 months, from August, 1844, to present time; I have broken on the machine; still conducting my business.

Haywood and Snyder are machinists at Pottsville; were; the firm is dissolved; they are machinists as well as miners, and engaged in making the breakers; they make first the perforated roller; first without and then (with) teeth; the increase of dust is in the same ratio with the reduction of the size of the coal; the only ground I have is that I suppose; I never weighed the dust; I don't use the old perforated plates; I don't know any one that does. The teeth in one of my rollers just enter in the space; in speaking of waste; I have only spoken of the perforated roller; one without perforations, less waste; I had fifteen men on the plates when I broke 900 tons per week; that was not average; men work ten (hours per day,) wages $5 per week; a man taking red ash coal as it comes out of the mines, can break ten tons per day; not lump coal; the calculation is made with red ash coal and the best workmen; one hundred and fifty tons per day is the most the rollers can break profitably; rollers increase the quantity of slate; the wages of boys are from twenty-five to sixty-six cents; fifty cents is rather more than the average; I should judge if anything $9,200 is more than an average cost of breakers; I paid $1,000 for the rollers and putting them up; the engine I had before; the item of interest and depreciation may be incorrect; the market don't require a better selection of sizes now than before; the hammer used was a small force hammer; I am using the Battin machine; I am not paying for the use of the machine; I do not think I have come to the conclusion that the breaker was an injury to me, until I have come here; since I have come here, I understand rollers can now be put up for $600.

Richard Kear.

I reside in Schuylkill county; I follow the coal business; I think I have been at it about 18 years; I have broken coal with hammers on planks and plates; I don't know how long; I think on platform five or six years; I never broke any on plates; I break now on what they call the Battin rollers; we do from 60 to 80 tons per day; pink ash coal; a little harder than red and softer than the white; a workman can break on planks with hammers from 7 to 8 or 9 tons; I don't know whether more can be broken on perforated plates; breaking by rollers makes the most waste; I never made any calculation; I think there is 7 or 8 per cent. difference; when I say 8 or 9 tons on plank, I mean breaking, not screening; I don't think there would be much difference between breaking on planks and by rollers, with the amount of business we do; the coal broken on planks has the best appearance; I don't recollect there was any difference in price; those I sold it to gave plank broken coal a preference; that broke by hammers (is) freest from slate; we have a better opportunity of picking out the slate on

platforms; I was at our establishment the time Mr. Bennett was there; I do not consider what we did when he was there; a fair test of the capacity of our machine; couldn't begin to break as much of an average; I was anxious to see how soon a ton of coal could be broken; I told the engineer to run the engine as fast as he could; at this time there was one man putting in; I helped through, which made two; we ground up slate and coal altogether; we break about 70 or 80 tons per day; we break pretty regularly; we could not break a ton in two or three minutes, unless we put in slate and all; it would render our coal more unmarketable than if the slate had been taken out; it is not more than three or four feet wide where coal goes to the rollers.

Cross examined.

I think I put up my machine in the fall of 1845; I had it in use until now, with the exception of a year, when we had a fault in the mine; I was to keep a cent per ton for the use of it; when I made the last payment for the use of the machine, I don't know; I do not think I have made any payment for two, and perhaps not for three years; I think (I) could break 150 or 170 tons per day; I don't think over 170 tons; we might break more; the machine would be able to break 200 tons per day, if not more; Mr. Bennett timed the breaker; I was there at the time; I can't tell in what time the coal was broken; it may have been in four or five minutes; I don't know that it was a minute and a half; we had a conversation about it afterwards; I said to the engineer he should run the engine as fast as possible a minute or two before the coal was broken; I broke perhaps ten years on planks; I have attempted to make estimates several times of the comparative cost of breaking by hand and by machine; the first estimate was made perhaps five or six years since, before I put the Battin breaker up; I've not made any estimate within the last year or two; I keep only one man to feed the breaker, occasionally two; I might put the coal on the level before putting it through the breaker, but it would be an additional expense; I don't thing I ever broke as many on the platform as with the breaker; I broke by hammer and machine at the same time in 1846; made more dirt by the breaker; I have not been called upon to bear any part of the expense of this suit; I have made no promise to pay expenses.

Re-examined.

I was subpœnaed by the plaintiffs. Breaking 200 tons per day would tend to wear out the machinery faster than if we broke a less quantity. It would be less marketable than if we broke a less quantity. There is some slate in all coal. In '32 and '34 the price of coal was very low. In '42, '43, and '44, the price of coal was very low. In the spring of '45 it got higher. I think coal was a little higher in '42, '43, and '44, than now. Coal was so cheap last spring because there was no demand for it. The breakers wear fast. I have renewed my mine once since 1845.

Francis Daniels sworn.

I am in the coal business; been engaged in it 20 years. I have broken coal with the Battin rollers. I have broken on platforms, on planks, on plank platforms, not on perforated plates; there is more waste by rollers. I have noticed comparative waste; difference in chestnut coal, between plank platform and rollers, in favor of plank platform of four per cent.; the dust against the rollers about six per cent. There would be about 12 cents per ton difference between platform and rollers; never noticed the difference in waste between solid and perforated cylinders. Coal is cleanest on platforms. I can't tell which commands the readiest sale in market since the machine has been in operation. Planks would be the cheapest way of breaking fifty tons per day. I don't know any mines that break on planks. I have kept an account of the wastage of different ways; didn't think worth while to bring it here. My knowledge is from continued observation. I think coal sold higher in '42, '43, and '44, than at present. It was higher in '47 than now.

Cross examined.

The present price of chestnut coal is $1. I have kept an account in a book; it is a time list, &c. We broke coal by hammers, including in 1843. In 1844 we put up a Battin roller. I did not take particular notice of the waste by hammer. I cannot let that book be seen. I make a comparison of breaking by hand and by machine during two weeks, when our machine was out of order. We break from 30 to 150 tons per day. By hand we broke, in 1843, 30,000 tons. In 1844, by machine, 50,000. We can do more business by machine than by hand. We have, since 1844, been aware of loss by breaker. There was an arrangement with Mr. Battin's agent at one cent per ton. I have not paid for three years. I have not seen any paper. I am one of the firm of Rogers, Sinnickson & Co. These experiments took place at the mines of the Delaware Coal Company. I was then their manager. I was their manager for thirteen years. I was manager for (the) Delaware Coal Company; breaker was put up in 1844. I saw Bast's breaker. John C. Marle was there on the part of the company. I was asked my opinion by J. C. Marle, and said I thought the machines would answer. We have one colliery a half mile from Pottsville; another eight miles from Pottsville. That is all the firm own. We have a breaker at each of those collieries. The Pottsville colliery is the best; breaker put up in 1844. We bought in 1847; it was renewed about two years ago. It was burned down; frame work and part of machinery was destroyed. I don't recollect what it cost to reinstate. It was insured for $5,000. My engine (is) 20 horse (power.) Repairs not made by my supervision. I think it was the Franklin Insurance Company insured it. The repairs were made under the superintendence of our carpenter. I don't know how much was paid; should think it cost between $4,000 and $5,000. Mr. Sinnickson,

one of the firm, made what arrangements were made with the company. We might make as much by the extra tons of coal as by hand. The machinery was renewed, as before, after the fire. In '44 and '45, two years, I was managing machines for the Delaware Coal Company. I reported to the Delaware Coal Company that (the) machine was losing the company 12½ cents per ton—to J. R. White, president. It would cost $1,500 to put down planks. The plank would cost probably $500. It would cost about $1,000 to excavate and put them down. The Delaware Coal Company broke, in 1844, 50,000 tons; in '45, somewhere near 40,000. In 1843, the cost of breaking on planks was 27 cents per ton—breaking, screening, and putting in cars. The cost with machine in 1844, with a business of 50,000 tons, was 19 cents and a fraction—all that appears in the books. I don't know any thing about the agreement with the Battins. I don't recollect having said to any one that the cost of breaking for Delaware Coal Co. was reduced one-half. Our rollers were renewed by the Insurance Company. The rollers were put up about two years ago. They are now worn out. We have renewed our rollers on the other mine. To the best of my knowledge, there is a loss of four cents per ton by the breakers We ship 65,000 tons, a little over two-thirds broken. We can enlarge the platforms to do the same amount of business. We send a greater amount of coal to market by machine. We use a good many boys.

Re-examined.

We have two different hoppers moved by the same engine. The coal which passes through one pair of rollers does not also pass through the other two. It does, but there is a partition between. We have red and white ash (coal.) We have the rollers partitioned off; one-half for white, another for red ash. Our rollers are in length five feet. I don't know any other rollers of the same size in Schuylkill county. There is nothing to prevent us from breaking as much coal as can be got out of our mines. Wages of hand breakers, $5 per week.

George H. Potts recalled.

Pay boys 40, instead of 50 cents. Cost of breaking and screening on planks, 26 cents per ton. Cost of breaking and screening on plates, 18⅜ cents per ton. On machine, 16⅓ cents per ton; that is, in a business of 150 tons per day. I don't include waste. Waste, 2½ per cent. in chestnut coal. I know there's an increase of dirt. It would be more expensive to break by rollers. This calculation is for red ash, softest kind of coal.

Cross examined.

I think coal can be broken cheaper by machine and by plates. My impression is that the waste would be less with perforated rollers than with solid. Pieces of coal get inside the cylinder.

Francis Daniels recalled.

The paper presented by plaintiffs' counsel is acknowledged and recognised by witness. It is from the American Fire Insurance Company.

George W. Snyder sworn.

I am engaged in steam engine and machine making. I am in the coal business. I've been in the machine business 15 years, and 12 of that in the coal business. I have broken coal on platforms and with the rollers. I am not prepared to say which made the most waste. I have always been under the impression that the solid roller made the most waste.

Mr. Hughes offers to prove, that prior to the date of Battin's patent Mr. Snyder prepared drawings of toothed rollers in the same manner as these are made; that, after the platforms were completed, he went on (to) put them up at a colliery in Schuylkill county.

I don't know Ratcliffe and Johnson's mines furthest from Tamaqua, nor the rollers they use. As there would be more dirt, there would be more pea coal.

James Codrington recalled.

I have been in the coal business, in Schuylkill county, 19 years. I never broke any coal by hand; I have superintended coal broken by hand. A good workman ought to break from seven to nine tons on plates. I have examined coal broken by solid and perforated rollers.

Witness proceeds.

I can't tell the difference between the coal broken by solid rollers and by hand. Coal broken by hammers is the purest from slate. I have seen the breaker at Ratcliffe and Johnson's mines, farthest from Tamaqua; it consists of one roller and plate, like the model produced. I saw this put in; it (the model) is somewhat like.

Cross examined.

I saw the machine when it was up, about two years ago.

Hopkins Thomas sworn.

I live at Black creek, about seventeen miles from Tamaqua, in Carbon county. I work smith work, and various kinds. I did manufacture many a roller; I made a roller for Ratcliffe and Johnson, same as that, (the model produced by defendant;) it was put up 22d January, four years ago. It was built in Tamaqua, and put up at a mine about two or three miles from Tamaqua. I have only made one for Ratcliffe and Johnson; my men put up two; I was their boss. The one in Tamaqua was made like Heilner's, with rollers and teeth—two rollers.

The defendants offer to prove that, as early as 1841, the Lehigh Coal Company had, in 1841, put up two rollers, with long teeth geared together as these are, and revolving in the same manner. There was a continuous tooth along the roller, not fluted; they had sharp teeth; the teeth in one roller striking into space on the opposite roller.

Plaintiffs object.

Testimony rejected.

Defendants except.

Stephen S. Salisbury sworn.

I reside at Providence, R. I. I am a coal dealer; I have been in business since 1842. I have broken coal by hand; I have broken with toothed rollers. The cheapest mode of breaking, taking into consideration waste, is by hand; I don't know difference in waste. It is cheaper to break by hand, waste is so great in coal broken in Providence. We coal there from Schuylkill county, broken there by machinery. Hand broken coal is worth the most in our market—75 cents more per ton; it's clearer from slate. I can tell the difference between machine and hand broken coal, by seeing it in large, but not in small quantities. The difference consists in slate and appearance of the coal; hand broken coal more round and more uniform, and less flat. Machine broken is more flat. This difference in price and quality has existed ever since I have known any thing about the business.

Cross examined.

I speak of coal broken at Providence. I speak of coal said to come from here. I was at Charles Miller's mines, and saw machines at work.

Mr. Porter reads in evidence notice to defendants to produce books, &c.

Samuel B. Young affirmed.

I reside at Port Carbon, Schuylkill county. I have been engaged with Darling and Hewes for the last two or three years, attending to the sale of their coal; I'm also engaged with Mr. Hewes in the sale of his coal. Mr. Darling is engaged with Mr. Hewes in buying and selling coal. I am intimately acquainted with all their business; I had access to their books. Mr. Hewes is engaged in mining. I don't know that Mr. Darling is engaged in any other business. I have every reason to believe Mr. Darling has nothing to do with the mining of coal. Mr. Darling now resides at Philadelphia. The firm of Darling & Hewes does not sell the coal mined by Hewes; they don't sell any part of it. I think Mr. Darling resided at Port Carbon about two weeks after the formation of the co-partnership; had not resided there prior to it; he was merely there temporarily; mining was conducted in the name of John G. Hewes.

Cross examined.

I am employed by Darling & Hewes for the sale of their coal; also by Hewes; receive separate compensation from each. I never have

received the whole in Philadelphia. I have seen the balance sheet of the Schuylkill Company business; it was taken off the books to be sent to Philadelphia, to compare with the accounts here; this is done yearly. They are called Darling & Hewes at both places. I have seen the balance sheet of business conducted by Mr. Hewes at Port Carbon; I believe Mr. Darling telegraphed to Mr. Hewes for the books. I have no reason to doubt that he received the telegraphic communication. I'm not positive that Mr. Darling's name appears on the balance sheet of Mr. Hewes. I don't know that there would be any thing to prevent the production of the books.

And here the defendants closed.

And the plaintiffs offered the following rebutting testimony:

William Gould sworn.

I reside in Pottsville; I know Mr. Aquila Boulton very well. I worked for Mr. Boulton alone, and then Bell & Boulton for seven years—all the time they were in partnership. Bell owned the property. I got 37½ cents for breaking the first year; 31¼ least I ever got, breaking, screening, and loading. If a man had to pay $1 a day it couldn't be done for that. Good hands would run not quite four tons per day. I first came down on Monday; I got the despatch on Sunday morning; first I knew I was going to be a witness.

Cross examined.

I (have) broken on planks; I never broke with perforated plates. A man might break eight or ten. When I broke on platforms, the coal didn't fall down into revolving screen. I used hand riddles; I preferred it to the revolving screen. After the coal was broken it had to be shoveled into the screen. I never made but two sizes. I should judge, from 1838 to '45, I worked at the machine.

William Dehaven recalled.

I have seen coffee mill breaker—made a number of them. Made Battin breakers. I know Francis Daniels. I have had several conversations about breaking by breakers. I think, in the spring of '47, I entered into a contract with Rogers, Sinnickson & Co., to put up a breaker; Mr. Daniels and Mr. Sinnickson were present. Mr. Daniels said he wanted the Battin breakers in. They had tried them for the Delaware Coal Company; he said he believed it was the only thing that would answer the purpose of breaking coal. That breaker was intended for an entirely new location; it's at my shop now. At that time they were just commencing business; they have two mines now. They renewed one of the breakers. Mr. Daniels called at my shop to see whether the old rollers first made by me would do. This, I think, was in 1848.

Cross examined.

The breakers I first made for Rogers, Sinnickson & Co., *was* for

their new Boston colliery; I believe it was in the spring of '46. I don't recollect any thing said about waste in the conversation with Mr. Daniels; he was merely speaking of the breaking. At that time no breakers, except one, had been put up.

Daniel R. Bennett recalled.

In 1844 I had several conversations with Daniels, several months after the Delaware company had put up their breakers. Mr. Daniels spoke of the great advantages of the breaker; he said it required much fewer hands, and it would be impossible to do the same amount of business they were required to do, and could do, with[out] the breaker. Mr. Bast broke 5,034 tons in last month. His coal is broken by one revolution of the breaker. The reason I know this is, I'm agent of the owner of the land.

Cross examined.

This is the whole amount of coal sent from Red ash vein—sent over the weigh scales. I don't know that some of it was not broken, except the general fact that the red ash coal is all broken. The conversation with Mr. Daniels was in '44; have had none since.

Francis Daniels recalled.

Mr. Maginnis, a machinist, of Schuylkill county, was one of the appraisers. I only gave in evidence that breaker was burnt down. After June, '48, the breaker and fixtures were renewed. I don't know who it was done by. I attend to the mining part of the business alone.

And the plaintiffs closed.

And the learned judge charged the jury as follows:

Charge of Judge Kane.

The three suits, in which the jury is called on to render verdicts, seek to recover damages against the defendants for infringements of the plaintiff's rights as a patentee.

Mr. Battin obtained a patent, on the 6th of October, 1843, for a new and useful improvement in the machine for breaking and screening coal, which he defined in his specification as one in which the breaking and screening were effected simultaneously by a set of breaking rollers of a certain form, operating in connexion with an assorting screen. His "claim" was for the manner in which he had arranged and combined these together.

On the 20th of January, 1844, he described certain improvements which he had made in his machine, and caused them to be included in his patent right. These are not important to the question before us now; but the specification, in which they are set out, refers to his original invention as having consisted "in the combining of the breaking and sifting apparatus with each other."

The case of Battin vs. Clayton, which was before us some time ago, grew out of an alleged infraction of this patent of 1843. We held, on

the trial of that case, that the patent being merely for the combination of machinery, it could neither be supported nor assailed by proof of the novelty, or want of novelty, of the parts. The patent was thereupon surrendered, and a new one issued, on the 4th of September, 1849, under an amended specification, which described essentially the same machine as the former one did, but claimed, as the thing invented, the breaking apparatus only.

It is said that the present defendants are using the apparatus described in this re-issued patent, and that they should be mulcted in damages accordingly. But there are two legal positions, of a general character, which appear to me to bar the plaintiff's right of recovery. They are these:

I. That a description by the applicant, for a patent of a machine, or a part of a machine, in his specification, unaccompanied by notice that he has rights in it as inventor, or that he desires to secure title to it as patentee, is a dedication of it to the public.

II. That such a dedication cannot be revoked after the machine has passed into public use, either by surrender and reissue, or otherwise.

The first of these propositions will hardly be disputed. If an inventor has a right at all to give up his invention to the world, there is no more unequivocal way of doing so than by publishing it on the records of the Patent office, and at the same time making no claim to it as his exclusive property. There is no need of a formal disclaimer where no claim can be implied; and the implication is all the other way, when, of several things described, one is claimed without the rest.

The second proposition, also, seems to be susceptible of easy demonstration. Protection is given to an inventor under the patent laws as the consideration for his disclosing what was not known before, not as a tribute of civic gratitude for "good deeds past." He loses his right if he allows his invention to become known before he patents it; and when he does patent it, he is required so to describe it, at the very outset, that others may not only know how to use it profitably after his patent shall have expired, but be able to distinguish it from other things while his patent is in force.

These are the conditions upon which he is promised the protective intervention of the law for the secure enjoyment of his exclusive property, and they are reasonable ones. He should not be allowed on the one hand to frame his disclosure so indefinitely as to make it practically useless to the community he is contracting with, or to require them to make experiments in order to learn what his meaning was. The law of his contract assumes that his own investigations have defined the character and extent of his invention, as well as its appropriate objects, and its practical usefulness with reference to them, and that he is about to give the fruits of his experience to the world.

Not that he is required to hold back his claim of protection till he has matured, or even imagined, every modification of his inventive idea. He may describe and claim what he knows, and as he knows it, and leave the office of perfecting it to others. But if he does so, he must

not complain that others more scientific, or more ingenious, or more practical, or more patient than himself, come after him to claim property in that which might have been his own, but which he suggested without appropriating.

It may be that his mind is of the higher class that distinguishes between an isolated, unreasoned fact, and the illustration of a principle; and the knowledge which he imparts may take the form, therefore, of a general, instead of a particular truth; and such also may then be the character of his patent. But what he has discovered, he must in every case announce and describe, if he asks for it protection as his property. He may not mystify where he cannot teach; he is not to shut out others from the field of invention, except so far as he has occupied it himself, and marked its boundaries.

Nor should he be allowed, on the other hand, to defer the assertion of his right till others have been led, by his silence, to regard it as waived in their favor, and to make investments of capital, industry, or skill, on the faith of such a waiver. The protection of skill, in its broader sense, is the peculiar object of the whole system of patent laws, and it would be specially unjust to the men who represent the skill of the community, that they should be invited to elaborate the unclaimed suggestions of a patentee, and be precluded afterwards from using the results of their own invention, by finding them embraced in the more general expression of his discovery as set out in an amended specification; that very expression suggested, in its turn, perhaps, by what they had done and published, or, perhaps, even patented themselves. The general rule is, therefore, a just as well as a long established one, that the patentee must stand or fall according to the assertions of right that he has made in his application.

The exceptions harmonize in principle with the rule. They apply to those cases in which there has been formal error, which may be amended, of course; or those in which the patentee has by inadvertence described his invention imperfectly, and offers a more accurate description as a consideration for the grant of the amended patent; or those in which, having ignorantly claimed more than he was entitled to, he desires formally to acknowledge his mistake, and renounce the right he had asserted. In the first of these cases, good faith exacts that he be allowed to repair the error; in each of the others, the public is a party to be benefitted by the modification of his patent right.

The act of 1836 provides, therefore, (Sec. 13,) that whenever a patent shall be inoperative or invalid by reason of a defective or insufficient description or specification, or by reason of the patentee claiming in his specification as his own invention, more than he had a right to claim as new; if the error has arisen from accident, inadvertency, or mistake, and without fraudulent or deceptive intention, a new patent may issue to the inventor for the same invention in accordance with a corrected description and specification, for the residue of the unexpired term; or, if the original claim has been so framed that the erroneous part of it may be stricken out without impairing the full and intelligi-

ble import of the rest, the patentee may, under the 7th section of the act of 1837, file a disclaimer in lieu of an amended specification.

But neither of these sections authorizes a change in the character of the claim—the substitution of a different patentable subject. The defect to be remedied is either some insufficiency of description, or an error in claiming too much. The patentee may make his specification more accurate, or he may restrict the limits of his claim, but a disclaimer cannot expand his right, and his reissued patent taking the place of the one he has surrendered, must be for the same invention which he sought to patent from the first.

Were the law otherwise, it would be a perilous thing to admit of improvements into the machinery and processes of our workshops. There would be no knowing what was patented and what public. An inventor would have only to amplify his description and illustrate it well by drawings and models, postponing his claim to some part or other of it until it had passed into use, to be secure of many perfectly legitimate rights of action, for discussion afterwards in the courts, or more profitable adjustment by compromise.

It is no answer to this, that such a course would be fraudulent; for how is such a fraud to be detected? Can the Commissioner refuse an amendment which comes to him supported by the patentee's oath, and altogether in harmony with the description, drawings, and models that accompanied his first application? Where is the proof to come from of a "deceptive intention" on his part?

Nor is it an answer to say that, according to the 13th section of the act of 1836, the amended specification is to be without operation or effect, except "on the trial of actions for causes accruing subsequently." The process newly claimed may have required a large preparatory outlay, expensive buildings, peculiar machinery, large purchases of material, widely extended contracts, the special education of skill. To apply these to their proposed use, or to continue applying them after the specification has been amended, will constitute a "cause of action subsequently accruing," which the law will give damages for, and equity interpose to prevent. It costs some thousands of dollars to erect a machine like the defendant's, and it is valueless to him if he is not allowed to use it.

I hope that I shall not be understood as animadverting on the plaintiff in these remarks. His conduct appears to have been entirely fair, and I am truly sorry that he fails of the protection he has sought, for the want of a specification properly drawn in the first instance. The discussion is of a principle, not of an individual case.

Nor does it really involve a question of good faith. Public policy, the safety of all who are watching the advance of art, and availing themselves of it for the purposes of practical use; the intelligent and enterprising artificers of progress, the thinking mechanic who labors to improve upon what is known, to make things better than he finds them; the capitalist, who rewards skill and labor, while he shares their earnings, and the entire community made richer, happier, wiser, and bet-

ter by the results of judiciously directed industry, all demand that a clear and definite line shall distinguish between that which is prohibited and that which is free; a line not to be varied capriciously or without full previous notice, nor with the changing opinions of individuals as to the character and extent of their exclusive interests, nor to the prejudice of any vested interest of the many.

Mr. Battin's invention, as he now defines it, was in use for nearly six years before he claimed that it was his property. He had made it known as an unprotected element of the combination he patented in 1843. It was not till 1849 that he asserted any other right in it for himself than he conceded to every body else. He cannot reclaim what he has thus given to the public.

For these reasons we instruct you that your verdict in each case must be for the defendants.

The plaintiffs took exceptions to the charge on the following grounds, viz:

That the learned judge erred—

1st. In the construction given by him to the patents and specifications of October, 1843, February, 1844, and September, 1849.

2d. In ruling as matter of law that the patentee had given his invention to the public.

3d. In construing the 13th section of the act of 1836, and the 7th section of the act of 1837.

4th. In charging the jury that "Mr. Battin's invention, as he now defines it, was in use for nearly six years before he claimed that it was his property. He had made it known as an unprotected element of the combination he patented in 1843. It was not till 1849 that he asserted any other right in it for himself than he conceded to every body else. He cannot reclaim what he has thus given to the public," and in not submitting to the jury the facts proved in regard to the origin and use of the invention.

5th. In directing the jury that a description by the applicant for a patent of a machine, or a part of a machine, in his specification, unaccompanied by notice that he has rights in it as inventor, or that he desires to secure title to it as patentee, is a dedication of it to the public, and that such a dedication cannot be revoked after the machine has past into public use, either by surrender and reissue, or otherwise.

6th. In holding that the facts of this case are embraced in the foregoing propositions.

7th. In not deciding that the patent of 4th September, 1849, is good and valid in law.

8th. In directing the jury to find a verdict for the defendant.

A, No. 3292.

The United States of America.

(Vignette.)

To all to whom these letters patent shall come:

Whereas, Joseph Battin, Philadelphia, Pennsylvania, has alleged that he has invented a new and useful improvement in the machine for breaking and screening coal, which he states has not been known or used before his application; has made oath that he is a citizen of the United States; that he does verily believe that he is the original and first inventor or discoverer of the said improvement; and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the Treasury of the United States the sum of thirty dollars; and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said improvement; and praying that a patent may be granted for that purpose.

These are therefore to grant, according to law, to the said Joseph Battin, his heirs, administrators or assigns, for the term of fourteen years, from the sixth day of October, one thousand eight hundred and forty-three, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement; a description whereof is given in the words of the said Joseph Battin in the schedule hereunto annexed; and is made a part of these presents.

[Seal of the Patent office.] In testimony whereof, I have caused these letters to be made patent, and the seal of the Patent office has been hereunto affixed.

Given under my hand at the city of Washington, this sixth day of October, in the year of our Lord one thousand eight hundred and forty-three, and of the independence of the United States of America the sixty-eighth.

[Countersigned, and sealed with the seal of the Patent]

A. P. UPSHUR,
Secretary of State,
HENRY L. ELLSWORTH,
Commissioner of Patents.

The schedule referred to in these letters patent, and making part of the same:

To all whom it may concern:

Be it known, that I, Joseph Battin, of the city of Philadelphia, in the State Pennsylvania, have invented a new and useful machine for effecting, simultaneously, the breaking and screening of coal; and I do hereby declare that the following is a full and exact description thereof:

The breaking part of my machine consists of two rollers of cast iron; the peripheries of which are provided with teeth so placed as that, in

the revolution of the rollers, the teeth upon each of them shall stand opposite to the spaces formed by two contiguous teeth on the opposite roller. These rollers are geared together, in order to cause them to preserve the same relative positions. The coal to be broken is to be thrown into a hopper above the rollers, which rollers revolve inwards towards the coal. Below the rollers a long screen is suspended in such manner as that it may have a vibrating motion communicated to it endwise, by means of revolving cams or wipers. Immediately under the rollers the screen is furnished with fine meshes, which allow the dust or minute particles only to pass through; next to this the meshes are larger; and through these the nut coal will pass; and this section is succeeded in like manner by a coarse screen, and so on to four or five or more sizes. The screen is placed in an inclined position, and the coal consequently travels along it as it is made to vibrate, and is thereby assorted into different sizes.

The accompanying drawing is a perspective representation of the whole machine. AA, are the two cast iron breaking rollers, and B, the hopper, into which the coal to be broken is thrown. CC, are the two gearing wheels affixed on the shafts of the rollers, and by which they are made to turn simultaneously and correctly. D, is a fly wheel to regulate the motion. EE, is the screen which is sustained by the rods, FF, which are attached by screw nuts at their upper ends to the rock shafts, GG. A cam or wiper, shaft H, crosses the frame of the machine, and carries the cams or wipers I. The shaft, H, is made to revolve by means of a pulley, J, driven by a band that passes around a pulley on the shaft of one of the iron rollers. The wipers act against a piece of metal projecting up from the screen frame; to cause the screen to act efficiently, it ought to be made to strike against a suitable spring as it is thrown forward by the wipers. Between each of the screens a flat plate of metal, KK, is interposed, to separate the heaps of coal from each other.

Motion may be communicated to the machine by any adequate power.

Having thus fully described the nature and operation of my machine for breaking and screening coal, what I claim as new therein, and desire to secure by letters patent, is the manner in which I have arranged and combined with each other the breaking rollers and the screen; the respective parts being formed and operating substantially as herein set forth and made known.

JOSEPH BATTIN.

Witnesses—
DANIEL CLARK,
GEORGE ERETEY.

This schedule contains a description of improvements annexed, and added to letters patent granted to Joseph Battin, bearing date the sixth day of October, 1843, and making part of the same.

To all whom it may concern:

Be it known that I, Joseph Battin, of the city of Philadelphia, in the State of Pennsylvania, have made certain improvements in the machine for effecting, simultaneously, the breaking and screening of coal; which improvements I desire to have added to the letters patent granted to me for said machine, on the sixth day of October, 1843; and I do hereby declare that the following is a full and exact description of my said improvements:

In the specification to which this is supplementary, I described two rollers having teeth upon their peripheries for the breaking of the coal, these rollers being geared together and operating as described in said specification. I have since found that this part of the process is much facilitated by the addition of a third or auxiliary roller of smaller diameter than the two at first used and placed above them. This auxiliary roller is shown at L, in the accompanying drawing, fig. 2, and also in section in fig. 3. The rollers, as originally used by me, remain unchanged, and one of them is shown in the figures marked A, the other A being partially covered by the plate or hopper B, which plate or hopper is left off on the opposite side. CC are the wheels on the axes of the rollers AA, which gear into each other. M is a wheel that gears into the wheel C, by which it is made to revolve.

The auxiliary roller L is placed at such height above the rollers AA as shall cause it to break any large lumps which might be thrown in, and not be readily acted upon by the rollers AA. The teeth on the roller L may be larger and further apart than those on the rollers AA, the latter being at no greater distance from each other than is necessary to allow a space which will admit the largest size broken coal to pass between them; whilst the distance between L and A may be three or four times as great.

This is shown most distinctly in fig. 3, in which I have represented the principal and auxiliary rollers in a vertical section along the line XX of fig. 2, omitting the frame work, for the purpose of more clearly showing the arrangement of the rollers and their gearing. The wheel M may be of about one-half the diameter of the wheels CC. The difference of the velocity with which the rollers AA and L revolve, improves the action of the machine, causing the roller L to break the large lumps the more readily.

In my machine as first described I proposed to use a long, flat screen, placed in an inclined position, and made to vibrate by means of cams or wipers; it has been found on trial, however, that these flat inclined screens do not separate the broken coal into its respective sorts so perfectly as does the ordinary revolving screen. I, therefore, instead of combining my breaking apparatus with the flat screen as originally described, now combine it with the revolving screen furnished with meshes, successively increasing in size in its different segments from the breaking apparatus to the lower extremity of the inclined cylinder. The finer segment N, through which the dust passes, has within it a

stronger cylinder O, to sustain the weight of the coal. P and Q are coarse segments; these may be increased in number as may be desired. To this kind of screen I do not make any claim, it being well known and in common use, as are also horizontal and inclined screens; my original invention consisting, therefore, in the combining of the breaking and sifting apparatus with each other. Having thus fully described the nature of my improvements in the above described machine for breaking and screening coal simultaneously, what I claim therein as new, and desire to secure by letters patent, is the combining of the third or auxiliary roller L with the machine for breaking and sifting coal, as patented by me on the 6th day of October, 1843. It will be manifest that a second pair of rollers might be used instead of the roller L, but these would require more power to move them, and would not perform their office any better than the single roller.

JOSEPH BATTIN.

Witnesses:
R. M. MAGILL,
GEORGE ERETY.

I hereby certify the foregoing additional schedule has, this twentieth day of January, 1844, been duly annexed to the original patent of Joseph Battin, and that the same is duly recorded on the books of the Patent office, and that fifteen dollars, the duty by law required, has been paid into the Treasury of the United States.

[Seal of the Patent office.]

HENRY L. ELLSWORTH,
Commissioner of Patents.

B.

No. 3438.

THE UNITED STATES OF AMERICA.

(*Vignette.*)

To all to whom these letters patent shall come:

Whereas Joseph Battin, Philadelphia, Penn., has alleged that he has invented a new and useful improvement in the machine for breaking coal, which he states has not been known or used before his application; has made oath that he is a citizen of the United States; that he does verily believe that he is the original and first inventor or discoverer of the said improvement, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the Treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose.

These are therefore to grant, according to law, to the said Joseph Battin, his heirs, administrators, or assigns, for the term of fourteen

years, from the twelfth day of February, one thousand eight hundred and forty-four, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said Joseph Battin, in the schedule hereunto annexed, and is made a part of these presents.

In testimony whereof I have caused these letters to be made patent, and the seal of the Patent office has been hereunto affixed.

[Seal of the Patent office.]

Given under my hand at the city of Washington, this twelfth day of February, in the year of our Lord one thousand eight hundred and forty-four, and of the independence of the United States of America the sixty-eighth.

A. P. UPSHUR, *Secretary of State,*
HENRY L. ELLSWORTH,
Commissioner of Patents.

[Countersigned and sealed with the seal of the Patent office.]

The schedule referred to in these letters patent, and making part of the same:

To all whom it may concern.

Be it known, that I, Joseph Battin, of the city of Philadelphia, in the State of Pennsylvania, have made a new and useful improvement in the manner of combining and arranging the toothed rollers used in the machine for breaking coal, which rollers, as combined and arranged by me, are described as follows, in the specification attached to letters patent for a machine for the effecting simultaneously the breaking and screening of coal, granted to me under date of the sixth day of October, 1843. "The breaking part of my machine consists of two rollers of cast iron, the peripheries of which are provided with teeth, so placed as that, in the revolution of the rollers, the teeth of each of them shall stand opposite to the spaces formed by two contiguous teeth on the opposite roller. These rollers are geared together, in order to cause them to preserve the same relative positions.

In the above named letters patent the manner of arranging and combining the toothed rollers was not made the subject of a claim, the said patent having been obtained for the combining of a roller breaking machine, with a screen for separating the coal into the different sizes required; but as the breaking rollers, so formed, arranged, and combined, are applicable to the ordinary cylinder breaking machine, when not used in combination with a screen; and as I have found by continued experiment that such rollers constitute a real improvement in any breaking machine, I have determined to secure to myself the benefit of such improvement in a distinct and separate patent therefor.

Rollers for the breaking of stone, of ores, of coal, of corn, and of other substances, have been frequently constructed, and are well known. Some of these have been fluted, and others have been furnished with

projecting teeth on their surfaces; but they have never, as I verily believe, been made to operate in the manner in which my improved rollers operate. In the accompanying drawing, I have represented my improved rollers in section, unconnected with the framework of the machine; thus allowing their peculiar arrangement and combination to be most clearly shown, and I have also given a top view of the main breaking rollers. Fig. 1 is a top view of the breaking rollers AA, having on their axes the toothed wheels CC, which gear into each other, thus causing them to revolve together and to preserve their relative positions. Fig. 2 is a vertical section of these rollers, in the line XX of fig. 1. In this figure I have also given a section of an additional or auxiliary roller L, which I sometimes use for the purpose of reducing such large lumps of coal as might not be readily acted upon by the principal rollers, and which is fully described in a patent obtained by me for an additional improvement on the machine as described by me in the patent of October, 1843, above referred to. On the main rollers AA, *a a a* are the teeth, which are made to extend around and along them in regular rows, leaving spaces *b b b* between them. Were these rollers to be placed sufficiently near to each other, the teeth *a a a*, on each of them, would pass into the spaces *b b b* on the opposite roller, and they would thus be geared together like a succession of toothed wheels placed on the same axes. The two cylinders, however, are, when used for breaking coal, usually placed at the distance of three or four inches, more or less, apart; but, when so placed, the relative positions of their respective teeth are to remain the same as though they actually mashed between each other like the teeth of geared wheels; each of the teeth *a a* being kept opposite to a space *b b*, when acting upon the coal to be broken. This, it will be readily seen, will be perfectly effected by means of the geared wheels CC on the axes of the rollers. M is a toothed wheel on the axes of the roller L, which, when used, is made to gear into one of the wheels CC.

Having thus fully described the nature of my improvement, in the manner of combining and arranging the toothed rollers used in the machine for breaking coal, what I claim therein as new, and desire to secure by letters patent, is the so forming and gearing of such rollers as that the teeth of one of them shall always be opposite to a space between the teeth in the other, whenever they are operating upon the article to be broken; the same being effected substantially in the manner herein set forth.

JOSEPH BATTIN.

Witnesses: R. M. MAGILL,
GEORGE ERETY.

Re-issue No. 142. C.

THE UNITED STATES OF AMERICA.

(*Vignette.*)

To all to whom these letters patent shall come.

Whereas Joseph Battin, of Philadelphia, Pennsylvania, has alleged

that he has invented a new and useful machine for breaking coal, for which letters patent were granted to him dated October 6th, 1843, to which was added an additional improvement dated Jan. 20, 1844, and said letters having been surrendered by him, the same have been cancelled, and new letters patent have been ordered to issue to him on an amended specification. The said Battin also surrendered the patent granted to him on the 12th day of February, 1844, for an improved machine for breaking coal, which patent is hereby cancelled, but not re-issued; which he states has not been known or used before his application; has made oath that he is a citizen of the United States; that he does verily believe that he is the original and first inventor or discoverer of the said machine, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the Treasury of the United States the sum of fifteen dollars, and presented a petition to the Commissioner of Patents signifying a desire of obtaining an exclusive property in the said machine, and praying that a patent may be granted for that purpose.

These are, therefore, to grant, according to law, to the said Joseph Battin, his heirs, administrators, or assigns, for the term of fourteen years from the sixth day of October, one thousand eight hundred and forty-three, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said machine, a description whereof is given in the words of the said Battin in the schedule hereunto annexed, and is made a part of these presents.

In testimony whereof I have caused these letters to be made patent, and the seal of the Patent office has been hereunto affixed.

[SEAL.] Given under my hand at the city of Washington, this fourth day of September, in the year of our Lord one thousand eight hundred and forty-nine, and of the independence of the United States of America the seventy-fourth.

J. EWING,
Secretary of the Interior,
THOS. EWBANK,
Commissioner of Patents.

[Countersigned and sealed with the seal of the Patent office.]

The schedule referred to in these letters patent, and making part of the same:

To all to whom these presents shall come.

Be it known, that I, Joseph Battin, of the city and county of Philadelphia, and State of Pennsylvania, have invented new and useful improvements in the machine for breaking and screening coal, particularly anthracite, and that the following is a full, clear, and exact description of the principle or character which distinguishes them from all other things before known, and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings,

making part of this specification, in which figure 1 is a perspective view of the machine, and figure 2 is a plan, and figure 3 a section. The same letters indicate like parts in all the figures.

Anthracite coal as taken from the mines is generally in large lumps, which, for general consumption, require to be reduced into small lumps, the regularity in the size of the lumps being desirable not only for convenience, but for economy in burning, as the more regular the size of the lumps, when of the size adapted to the grate, the better the combustion.

Anthracite coal, for which the machine is chiefly intended, is very frangible, and when broken the fracture is irregular. If broken by percussion the strength of the blow must not be great, or the whole will be reduced to powder; and if broken by pressure, the moment the required separation has been effected, the pressure must be withdrawn or the mass will be pulverized.

The machines for crushing iron ore and stones, and grinding and crushing other substances, used prior to my invention, when applied to the breaking of anthracite coal occasion waste by pulverization, and are not adapted to the peculiar nature of this material.

The object of my invention is to break this kind of coal in lumps of an approximately regular size, and with little waste; and to these ends the principle or character of my invention for breaking coal into small lumps, and that which distinguishes it from all other machines before known for this or any analogous purpose, consists in combining together two rollers, the shafts of which are geared together to cause them to rotate in opposite directions with positive and equal motions, when the peripheries of the said rollers are provided with teeth or projections, so disposed or arranged that the teeth or projections on the one shall, in the rotation, come opposite the spaces between the teeth or projections of the other, and vice versa, so that as the rollers rotate the teeth or projections on the rollers shall take the large lumps and break them into smaller lumps, by making pressure on opposite sides thereof, but at points not co-incident, and then by the continued rotation remove the pressure and liberate and discharge the broken pieces so soon as the desired effect has been produced.

The accompanying drawings represent the machine with a frame properly adapted to the purpose, but which may be varied at the pleasure of the constructor, and within this frame are arranged two parallel cast iron rollers. The peripheries of these rollers are cast or otherwise formed with projections or teeth of a pyramidal form, and arranged in rows running in the direction of helices, so that the space between any four contiguous teeth shall be a parallelogram, with two of its angles in a line parallel with the axis, and the other two at right angles thereto. The shafts of the two rollers are geared together by means of two cog wheels (C C′) that their peripheries shall rotate in opposite directions and with equal velocities, and their peripheries are placed at about a distance of three inches apart, more or less, according to the average size to which it is desired to break the coal. In this way the points of

the teeth of one roller will in the rotation come opposite, and, if desired, enter for a short distance into the spaces between the teeth of the other, and vice versa; but the teeth of the two rollers never come into contact with each other. A hopper (B) may be placed above the space between the two rollers with the lower aperture sufficient in capacity for the delivery to the rollers of the large lumps of coal as they come from the mine, and when properly broken by pressure between the rollers, the products may drop or be received into a screen or sieve (E) which may be inclined from one end to the other, the upper end being so placed below the rollers as to catch all the coal. The surface of the screen should be made into three, more or less, divisions, the meshes of the second division being coarser than those of the first, and so on, increasing towards the lower end which has the largest meshes. The requisite vibratory motion may be given to the screen by tappets (I) on a shaft (H,) which receives motion by a band (L) from a pulley (M) on the shaft of one of the breaking rollers. By this means, as the broken coal falls on to the screen, the particles pass through the meshes of the first division, those which are a little larger through the meshes of the second division, and so on to the end, the largest lumps being delivered at the end of the screen into an appropriate receptacle.

By the construction and arrangement of the breaking rollers, it will be perceived that as they rotate the teeth constitute a series of progressive levers which act on opposite sides of the lumps, and being placed so as not to coincide, snap or break the lumps between the points of pressure; this pressure gradually increasing until the separation is effected, that is, during the rotation, until the teeth reach a plane passing through the axis of the two rollers, and then the effect having been produced, the teeth recede to liberate the lumps, and thus avoid the further reduction of the material. This mechanical action of the rotary teeth is thus adapted to the frangible or brittle nature of coal, which is readily pulverized when subjected to a continued percussion or pressing action.

It will be obvious from the foregoing that the form and size of the teeth may be greatly varied, as well as the space between the periphery of the two rollers, without changing the principle or mode of operation of my invention, so long as the two rollers are geared together, and the teeth of one are in the rotation made to come opposite to, or in the space between, the teeth of the other, and vice versa, space sufficient to hold the required size of lumps of coal being left between the teeth of the two rollers when passing a plane which coincides with the axis of the two rollers.

What I claim, therefore, as my invention, and desire to secure by letters patent, is the arrangement of the teeth on the two rollers substantially as herein described, so that in their rotation the teeth of one shall come opposite the spaces between the teeth of the other, with sufficient space between to hold lumps of the required size, the rollers being so combined by gearing as to make them rotate in opposite direc-

tions, and with the required velocities to retain the relative position of the teeth of the two rollers as described.

JOSEPH BATTIN.

Witnesses:—AMOS K. CARTER,
ALEX. PORTER BROWNE.

Exd. C. F. S.

D.

The United States Patent office, to all persons to whom these presents shall come, greeting:

This is to certify, that the annexed is a true copy of the record of Joseph Battin's assignment to Samuel Battin, received and recorded the thirteenth of March, eighteen hundred and forty-four.

In testimony whereof I, Thomas Ewbank, commissioner of patents, have caused the seal of the Patent office to be hereunto affixed, this thirty-first day of October, in the year of our Lord one thousand eight hundred and fifty, and of the independence of the United States the seventy-fifth.

[Seal of the Pat. office.]

THOS. EWBANK.

Whereas I, Joseph Battin, of the county of Philadelphia, in the State of Pennsylvania, did obtain letters patent of the United States, for a certain machine for breaking and screening coal simultaneously, which letters patent bear dates 6th October, 1843, and 12th February, 1844; and whereas Samuel Battin, of the county and State aforesaid, is desirous of acquiring an interest therein—

Now this indenture witnesseth, that for and in consideration of the sum of two thousand dollars, to me in hand paid, the receipt of which is here[by] acknowledged, I have assigned, sold, and set over, and do hereby assign, sell, and set over, one equal undivided half of all my right, title, and interest in the said invention, as secured to me by said letters patent; the same to be held and enjoyed by the said Samuel Battin, for his own use and behoof, and for the use of his legal representatives, forever, in joint partnership with the said Joseph Battin and his legal representatives.

Witness my hand, in the city of Philadelphia, this fourteenth day of February, one thousand eight hundred and forty-four.

JOSEPH BATTIN. [L. S.]

Witness present: ENOS MEYER.

Examined. C. F. S.

Received 4th, recorded March 13, 1844.

And thereupon the counsel for the said plaintiffs did then and there except to the aforesaid charge and opinion of the said court, in manner aforesaid; and inasmuch as the said charge and opinion, so excepted

to, do not appear upon the record, the said counsel for the said plaintiffs did then and there tender this bill of exceptions to the opinion of the said court, and requested the seal of the judges aforesaid should be put to the same, according to the form of the statute in such case made and provided.

And thereupon the aforesaid judges, at the request of the said counsel for the plaintiffs, did put their seals to this bill of exceptions, pursuant to the aforesaid statute in such case made and provided, this 28th day of October, A. D. 1852.

R. C. GRIER, [L. S.]
J. K. KANE. [L. S.]

Verdict of the jury.

And thereupon the jurors aforesaid, upon their oaths and affirmations aforesaid, respectively do say, that they find in favor of the defendant.

Judgment.

And thereupon it is considered by the court here, that the said Joseph and Samuel Battin take nothing by their writ aforesaid, but that they and their pledges be in mercy, &c.; and that the said James Taggert go thereof without day. And it is further considered, that the said James Taggert recover against the said Joseph and Samuel Battin his costs and charges by him about his defence in this behalf sustained, adjudged by the court here to the said James Taggert with his assent, &c.